AUGUST 3, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Inventories in Good Shape

STEEL's quarterly survey of metal stocks reveals: 47 per cent of steel users have enough for more than 60 days; 39 per cent are good for 30 to 60 days; only 14 per cent have less than a month's supply. Outlook: Depleted stocks by the end of the quarter and a rapid rebuilding of inventories when the steel strike ends . . . Page 103

U. S. Will Edge Farther into Steel Talks if Strike Lasts Four Weeks

UAW: Reuther Is Its Chief Problem

1959: A Record Profit Year?

Chances for Depreciation Reform Better After Committee Hearings

Handling Equipment Orders to Climb

Molybdenum Sheets Are More Ductile

COMPLETE CONTENTS
TURN PAGE

METALWORKING OUTLOOK
PAGE 29

EC&M *Fuseless* AIR-BREAK STARTER

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NO COSTLY REPLACEMENT FUSES TO STOCK!

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This Week in STEEL

The Metalworking Weekly

August 3, 1959 Vol. 145—No. 5

Metalworking Outlook, Page 29

The Editor's Views—Plan for Long Steel Strike! 35
▶ U. S. Edging Farther into Steel Talks as Strike Continues 37
Several Companies Get Extensions—Further shutdowns avoided 38
Aluminum Strike Averted; Nonferrous Peace Prospects Brighter 38
U. S. Strike Doesn't Worry Canadian Firms 39
Steel Imports at All-Time High in May—Total 385,000 tons .. 39
▶ The UAW: Walter Reuther Is Its Chief Problem 40
Second of a four-part STEEL series on outlook for metalworking unions
▶ 1959: A Record Profit Year?—Take a look at first half results .. 41
▶ New Hope for Depreciation Reform—Industry gains ground .. 44
Skilled Help Shortage Near; Here's a Way to Avoid It 49
▶ Material Handling Equipment Orders to Climb 28 Per Cent .. 52
Fourth in STEEL series on metalworking's capital equipment spending
National Steel Speeds $300 Million Expansion 69

Technical Outlook, Page 73

Machine Builder Cashes In on Tape Controlled Production ... 74
This Electronic Control Speeds Cut Shape Delivery 76
Firm Takes Own "Medicine," Cuts Production Time 62 Per Cent 77
Metal Change Boosts Life of Heat Treating Hoods 78
Right Machining Methods Save Over $1 a Part 79
Hefty Handler Cuts Die Change Time—Serves 4000 ton press .. 80
Progress in Steelmaking—Computers May Cut Alloy Steel Cost 82
▶ New Molybdenum Sheet Much More Ductile—Bends easily ... 86
Turret Drills Step Up Production, Save Space 90
Backup Bar Speeds Weld Production—Aids missilemakers 91

Market Outlook, Page 101

Complete Index to Market News and Prices 101
▶ Most Inventories Still in Good Shape—Quarterly survey 103
Prices on Imported Steel Raised to Domestic Level 104
Blast Furnace Production Sets First Half Record 107
Steelworks operation chart and district ingot rates 110
Scrap Index Holds Despite Strike—Stays at $38.67 123
Nonferrous Metals—Labor Outlook Spurs Sales 126
Scrap Consumption Slipped Slightly During May 130

▶ Articles listed on cover.

WHERE TO FIND

Metalworking Pulse ..Turn page
STEEL Servicenter 5
Calendar of Meetings 10
Editorial & Business Staffs 16
Windows of Washington .. 46
Mirrors of Motordom 55
The Business Trend 59
Men of Industry 63
Obituaries 66
New Products 93
New Literature 99
Advertising Index 131

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Metalworking Pulse ▶

TURN

Metalworking Pulse

INDUSTRIAL PRODUCTION INDEX

	WEEK ENDED JULY 25	PREVIOUS WEEK	MONTH AGO	YEAR AGO
(1947-49=100) Based on steel output, electric power output, freight carloadings, auto assemblies	121†	138	173	136

†Preliminary.

Since the start of the steel strike, the industrial production index has slumped 41 points. The trend line will continue to slope downward as more steel contracts expire and as users' supplies dwindle.

Details on Page 59

U. S. PASSENGER CAR PRODUCTION

	WEEK ENDED AUG. 1	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Number of units assembled ..... (Source: Ward's Automotive Reports.)	120,000*	124,921†	108,397	62,846

*Estimated. †Preliminary.

Add Studebaker-Packard Corp. to the list of automakers who have shut down for model changeover. Plymouth Div. of Chrysler Corp. was scheduled to run out 1959s last Friday. Production continues at Ford Motor, American Motors, and General Motors.

Details on Page 56

NATIONAL STEEL INGOT PRODUCTION

	WEEK ENDED AUG. 2	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Net tons (thousands)	354*	365	2,215	1,561
Index (1947-49 = 100)	22.0*	22.7	137.9	97.2
Percentage of capacity	12.5*	12.9	78.2	57.8

*Estimated by STEEL; comparative figures reported by AISI.

Operations are expected to hold fairly steady at the current rate since most contracts with companies still operating are being extended. Dates for the next large number of expirations are Aug. 14 and Aug. 31.

Details on Page 110

STEEL SCRAP PRICE COMPOSITE

	JULY 29	WEEK AGO	MONTH AGO	YEAR AGO
Based on No. 1 heavy melting grade at Pittsburgh	$38.67	$38.67	$36.83	$40.00

Export demand for steelmaking grades of scrap is an important price support now that most of the consuming industry in this country is strikebound. Heavy generation and accumulation of industrial scrap are expected to decline.

Details on Page 123

FINISHED STEEL PRICE INDEX

	JULY 28	WEEK AGO	MONTH AGO	YEAR AGO
Based on Bureau of Labor Statistics data (1947-49=100)	186.7	186.7	186.7	181.5

Prices on stockpiled imported steel at Houston have risen to the domestic market level; in some instances they have risen even higher. Producers here have not wavered from their goal of halting the upward price spiral.

Details on Page 111

In 6 steps with Bethlehem cold-heading wire

Using Bethlehem C4037 heading-quality wire, this ¾ by 4-in. socket-head cap screw is produced in six quick steps:

1. Cut off blank
2. Bulbing
3. Heading
4. Extrusion
5. Trimming
6. Roll threading and knurling

The whole sequence is performed "cold." And it produces a cap screw free from the surface weaknesses of machined parts. Scrap loss is minimized because virtually the whole blank is utilized in the finished screw. Cold-heading wire is usually more economical than screw-machine stock; savings often come to 10 pct and more.

Bethlehem makes just about every kind of heading-quality wire. Manufacturing is rigidly controlled. Frequent mill tests assure proper surface quality, chemical composition, and internal soundness.

One of our engineers will gladly study your wire products—cold-headed or other—and recommend the grade of steel best suited, quite possibly with improved results. Just phone the nearest Bethlehem office, or write to the address below.

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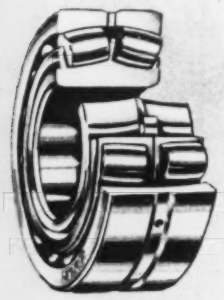
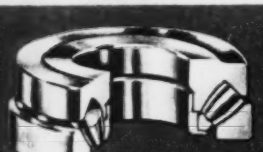
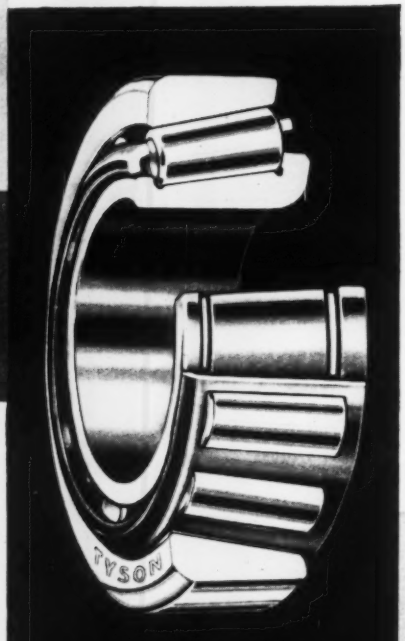
Angular Contact Bearing



Spherical Roller Bearing



Spherical Roller Thrust Bearing



Tyson Tapered Roller Bearing

Single-Row Deep Groove Bearing

Cylindrical Roller Bearing

We regularly produce all of the bearings shown here in a tremendous variety of bores, outside diameters, and widths.

Take just the Tyson tapered roller bearing, for example. We make nearly 1,000 sizes of the single-row, straight bore type alone! Bore sizes range from five-eighths of an inch right up to a precise fourteen inches. And these figures don't include the many other sizes available in our double- and four-row types.

Yet they are all standard SKF *bearings,* promptly available in large quantities at competitive prices.

So, why not get full details on the most complete line in the business? Any of our twenty-five sales offices can quote you facts and figures. Just call the one near you.

5921

Spherical, Cylindrical, Ball, and Tyson *Tapered Roller Bearings*

EVERY TYPE—EVERY USE

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New switch for matchless safety

Now, for the first time, the new American Electric Type "ND" Safety Switch offers *all* of the features "most wanted" in *one* safety switch by people who work with and use electrical equipment.

Included among the many "extras" to be found in this newest of safety switches are: visible double blade construction; positive, snap-action make and break; double insulation between blades and operating mechanism; optimum-size enclosures for maximum heat dissipation; plenty of wiring space for easier, faster installation; and an exclusive safety-yellow operating handle for quick, positive "spotting" even in poor light.

These and countless other field-tested design standouts assure the ultimate in safety switch protection with maximum operating life.

This new American Electric Normal Duty Safety Switch is, in fact, the result of the same kind of thorough engineering research and workmanship which has long made Clark Controller *"the standard of quality"* for industrial electrical control.

It meets NEMA standards for normal duty industrial and commercial use and is approved by Underwriters' Laboratories for these applications as well as for service entrance equipment. It is currently available in 30-ampere and 60-ampere, 250-volt and 600-volt ratings, both fusible and non-fusible.

Bulletin 250-ND fully describes every detail of this new switch designed for "matchless safety". For your free copy see your nearest American Electric Switch–Clark Controller Company distributor. Or, write direct. 9551

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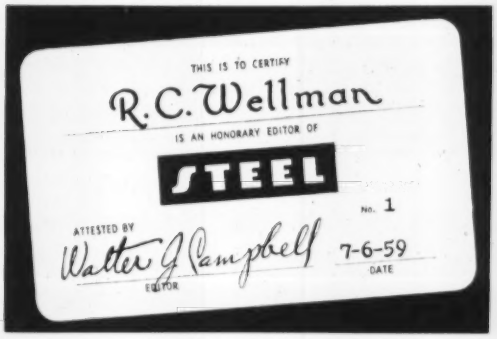
Please direct all correspondence to attention of Ed Service, STEEL, 1213 W. Third St., Cleveland 13, Ohio. August 3, 1959

Appearances Are Deceptive

We thought you might like to get a view of our Honorary Editor card. When it was decided to issue cards to readers of merit, the editors talked about the exact wordage and the possibility of including a bit of humor on the aft side of the card.



Behind this staid facade, a facsimile of the card owned by Bob Wellman, the man who named this column, there lurks this phraseology:

Be It Known

The bearer is an expert communicator in the field of metalworking, having contributed knowledgeable words to the editorial pages of STEEL. His titles, Man of Letters and Honorary Editor, empower him to expound on *res metallicas* at great length. When in the presence of a fellow Honorary Editor, whose entitling card is of a lower number, the bearer shall defer to the learned opinions of the Senior Honorary Editor. That august personage has been through the mill at an earlier date.

Those phrases will put Honorary Editor Wellman smack in the driver's seat in any discussion about things metallic. The words also gave pause to some of our editors. "What'll we do if someone pulls one of these cards on us during an interview?" was the query. The answer: "Well, you can point out, graciously, that the title is Honorary; pull out one of your calling cards, mentioning that you're a bona fide editor, and hope the guy has a sense of humor."

We always run the risk of incurring the wrath of a foreign language scholar when we print anything other than English—and sometimes errors in English creep past us. With a concern for the niceties of the King's Latin, Editor Walt Campbell cast a skeptical gaze on the phrase *res metallicas*, asking if it had been checked out for correctness.

That it was. Miss Elizabeth Walker, assistant professor of classics and associate dean of Mather College, Western Reserve University, put the final O.K. on the phrasing. Among other jobs, the good dean teaches Latin. Initial research on the phrase was done by Associate Editor Neil Roberts, a former Latin teacher and now a writer on *res metallicas* for STEEL. Despite these authorities, we probably will hear from remote corners of the globe that the phrase should read *reges metallicas*, or *res metallorum*, or some such. We'd like to hear from you, and rest assured that we'll promptly forward all dissertations to Dean Walker.

Price Cutting's Two Edged Sword

The Editor's Views on "Price Cutting Is Suicide!" in the June 29th issue, brought this comment from A. J. Belanger, director of purchases, Inland Steel Container Co., Chicago: "Your editorial touched a raw spot. Your major point—to price oneself out of business is bad business—is a truism and will bring you no arguments. But my back went up at your assessment of blame. Of course the seller who either doesn't know or doesn't care about his costs is cutting his throat, but how you can blame the buyer is beyond me . . . The buyer who is diligent works to get the best price on an item, but he doesn't have complete vender cost figures, nor can he presume that the seller will exercise poor judgment and sell without profit. Management's failure to recover increased production costs carries a single pointed blame—poor pricing judgment . . ."

On the Other Hand . . .

BRIDGEPORT, CONN.

"MAY WE REPRODUCE AND CIRCULATE YOUR EDITORIAL TO OUR SALES REPRESENTATIVES? IT RINGS A BELL WITH US."

E. K. HOW
MANAGER SALES
CONDUIT PRODUCT DEPT.
GENERAL ELECTRIC CO.

From Lynwood, Calif., Ben Brunner, sales manager, Manchester Tank & Equipment Co. writes: "Your editorial was one of the best I've ever read and for the first time, as far as I know, brings in the problems involved with both seller and buyer."

For the Statistical Minded

Our midyear survey of business (STEEL, June 29, pp. 45-48) wherein we interpreted expectations of metalworking managers, evoked this in-

IT'S MACHINE 'TUNE-UP' TIME

How long have your Ex-Cell-O production machines been in continuous operation? Even the most reliable equipment will run faster . . . more accurately and *longer* after a thorough going-over by skilled Ex-Cell-O machine repairmen.

Necessary replacement parts are Ex-Cell-O "original equipment" quality; re-wiring conforms to JIC standards; tables and ways are hand-scraped to their level best; coolant and lubricant systems are restored to full efficiency, spindles are trued, and tooling can easily be up-dated to your specifications.

Call your local Ex-Cell-O Representative, or write direct for details on how older Ex-Cell-O machines can be economically "tuned" to today's production needs.

59-42

XLO EX-CELL-O FOR PRECISION

EX-CELL-O CORPORATION
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quiry from Samuel Lipkowitz, economic adviser, International Bank for Reconstruction & Development, Washington: "When I tried to relate some of the figures (second half of 1959 vs. the first half) they did not seem internally consistent. Illustration: Primary Metals, SIC 33.

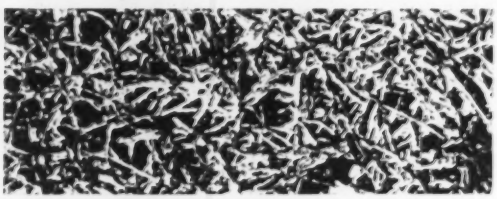
"I fail to see how, with unit costs rising more rapidly than selling prices, and almost no change in volume, that net profits can rise at all, let alone by 8 per cent. A comparison of unit costs and selling prices in each of the seven SIC categories shows unit costs rising more rapidly than selling prices. In the absence of an appreciable rise in volume, how can net profits rise?"

Our Explanation . . .

Is provided by George Howick, the editor who handled the survey: "The increase in selling prices could cancel out (or nearly so) the increase in unit cost of manufacturing. Remember, that does not include marketing, distribution, and other nonmanufacturing costs which tend to decline as volume increases. A decline in those costs, alone, can result in a substantial net profit increase.

"The percentage rise in unit volume could equal, or even exceed, the percentage increase in dollar volume, thus causing a percentage increase in profits. When an industry is operating near capacity, as many segments of the primary metal industries were when the survey was completed, a small increase in sales can bring about a much larger increase in profits."

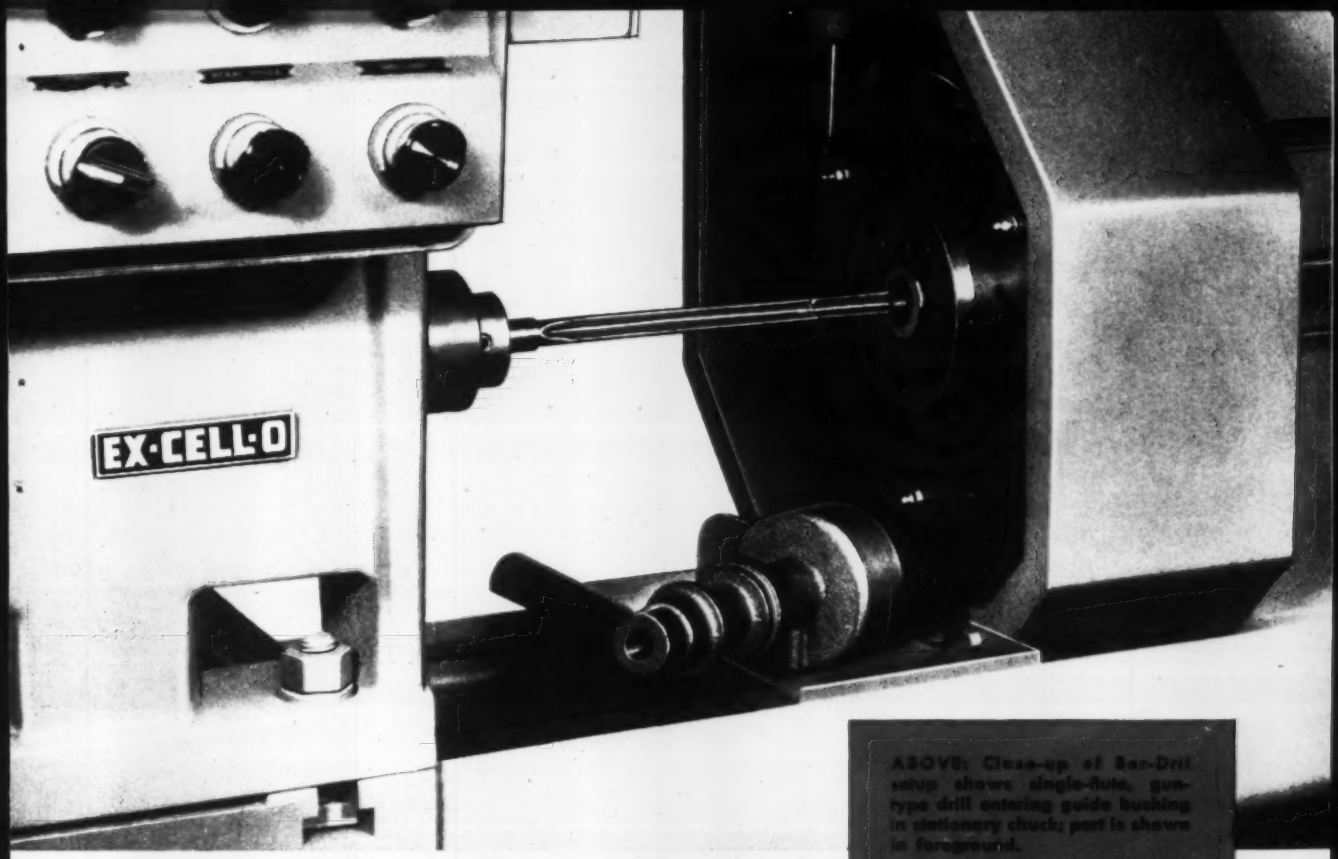
(Memo to George Howick: Are you available for consultation on personal income tax problems? Ed Service.)



Another 'What Is It?'

This bit of nonrepresentational art could be an eater's view of his breakfast cereal, a pestiferous patch of crabgrass, or a bale of hay.

It's really a magnification (25 times) of a new engineering material, fiber metal, developed by Armour Research Foundation, Chicago. Next week, Associate Editor Austin Brant will take you on a written tour of the fiber metallurgy process and point out materials it may spawn. Applications? "Filters, mechanical and sound vibration dampeners, self-lubricating bearing materials, low density structural materials, and metal-ceramic composites," says Austin, adding: "The list seems almost endless."



DEEP HOLES FROM THE SOLID, ROUND AND STRAIGHT WITHIN .0005"—

Bor-Drilled in 30 seconds!

A cast-iron automotive distributor base in high production requires a central hole 6⅞" deep by ⅝" diameter. Hold both concentricity and diameter to .0005" tolerance; finish the I.D. to 15 RMS or better. *How many operations would you specify for the job—drilling, reaming, plus honing or lapping?*

Actually, your process sheet needs only one notation—*Bor-Dril!*

Bor-Drilling is Ex-Cell-O's method of producing accurate holes from the solid with standard or special Ex-Cell-O Precision Boring Machines. The process utilizes a rotating gun-type drill; chips are cleared out the single flute of the drill by high-pressure coolant oil fed through the Ex-Cell-O Precision Spindle.

Ask your Ex-Cell-O Representative about this faster, better way to get a finish-machined small hole 12" deep or more *in one operation.* Or write direct for a free descriptive booklet on Bor-Drilling.

ABOVE: Close-up of Bor-Dril setup shows single-flute, gun-type drill entering guide bushing in stationary chuck; part is shown in foreground.

BELOW: Cutaway of part reveals quality finish of Bor-Drilled hole.

BOTTOM: Equipped for Bor-Dril operation, Style 112-D Precision Boring Machine precision-finishes long hole from the solid in 30 seconds.

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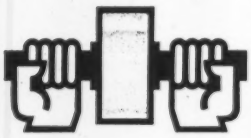
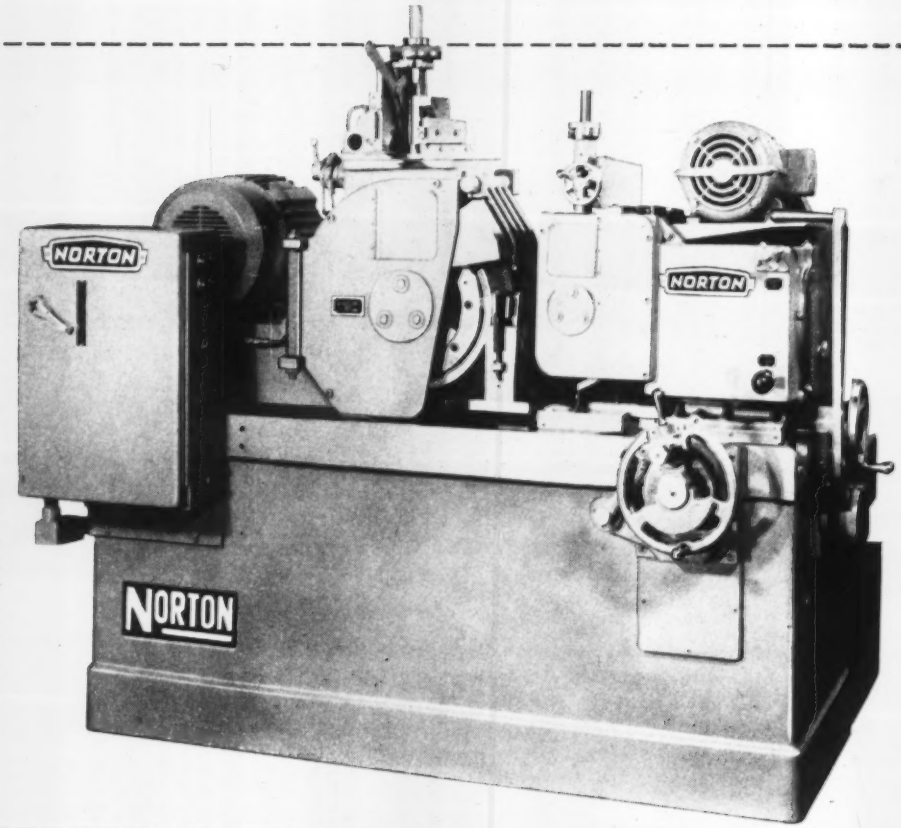
Newest NORTON Grinder!

The No. 2 Straddle-Bearing

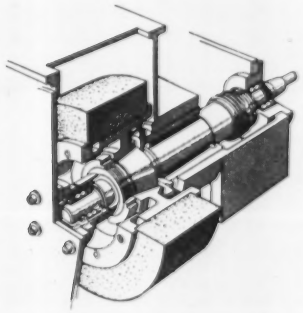


Centerless is built for speed . . .



Ready for Immediate Delivery
The new Norton No. 2 Centerless Grinder can be arranged for full automatic, semi-automatic or manual thru-feed or plunge grinding. Capacity includes work diameters ranging from 1/16" to 4 3/4" depending on type of work rest and bar grinding fixture.

3 MAJOR ADVANCEMENTS IN CENTERLESS GRINDING



accuracy . . . economy

Like all Norton grinders and lappers the Norton No. 2 *Straddle-Bearing* Centerless Grinder is built to deliver "Touch of Gold" performance — the Norton extra that adds value to your product while cutting your production costs.

You'll find plenty of proof of that in the modern construction of this newest machine of its type. *Straddle* support of spindle bearings adds strength and ability to take tough jobs . . . the mobile wheel head and constant work-loading alignment make jobs shorter and easier.

Many other features result in outstanding performance advantages. Call your Norton Sales Engineer, a trained expert in the grinding field, for consultation on how these features can benefit your production. Or write for Catalog 1328. NORTON COMPANY, Machine Division, Worcester 6, Mass.

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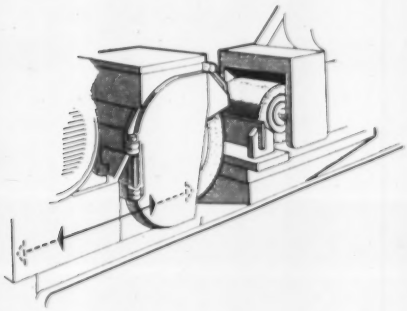
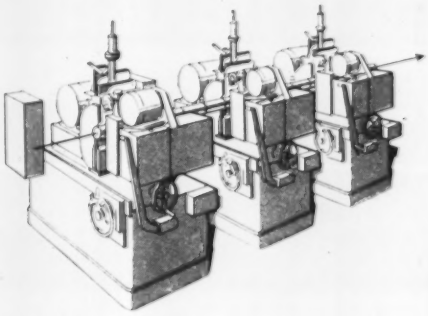
GRINDERS and LAPPERS

District Offices: Worcester, Hartford, Cleveland, Chicago, Detroit.
In Canada: J. H. Ryder Machinery Co. Ltd., Toronto 5.

Straddle-Bearing Spindle Support, in both grinding and regulating wheels, provides extra strength. Combined with the inherent rigidity of Norton spindles this boosts capacity to take heaviest cutting pressures, while permitting fast grinding to close tolerances under all conditions.



Mobile Grinding Wheel Head, with wheel mounted between head ways and feed screw located beneath wheel center for ideal balance, provides instant response to signals. This results in especially fast sizing, one of many important advantages over fixed head operation.

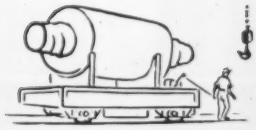


Work Loading Alignment is never disturbed by wear of either grinding or regulating wheel . . . neither is the alignment of the work rest blade. Movable heads for both grinding and regulating wheels make this advantage possible . . . and especially time-saving in a battery set-up.

Making better products . . . to make your products better

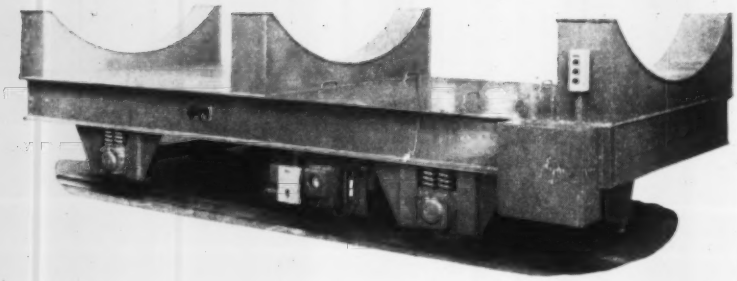
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electro-Chemicals — BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

Links up your HANDLING NETWORK



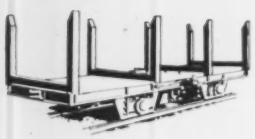
for added efficiency . . .

extra economy



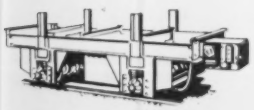
ATLAS WALK-ALONG

SAFETY-TYPE TRANSFERS



Special bed designs to cradle your load.

Single platform or double platform-operator rides.



Versatile power . . . diesel or gas electric, storage battery, or cable reel. Also remote control with no trailing cable.

If you're responsible for maintaining safe, low cost movement of heavy loads (5 to 125 tons) and intermediate transfer of these loads during process or storage, Atlas can help you by engineering a transfer car to meet your exact load and power requirements.

Atlas engineering gives you every modern safety feature for personnel protection.

. . . choice of power and control including:

1. Single lever (walk-along) forward, reverse with safety stop when lever is released.
2. Storage battery power with built-in charger.

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ENGINEERS & MANUFACTURERS SINCE 1896

CALENDAR

OF MEETINGS

Aug. 9-12, American Society of Mechanical Engineers and American Institute of Chemical Engineers: National heat transfer conference and exhibit, University of Connecticut, Storrs, Conn. Information: Prof. David A. Fisher, Mech. Eng. Dept. U-37, University of Connecticut, Storrs, Conn.

Aug. 10-13, Society of Automotive Engineers: National west coast meeting, Hotel Georgia, Vancouver, B. C. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Aug. 18-21, Western Electronic Show and Convention: Cow Palace, San Francisco. Information: WESCON, 1435 S. La Cienega Blvd., Los Angeles 35, Calif.

Aug. 19-29, National Screw Machine Products Association: Sales conference, Wade Park Manor Hotel, Cleveland. Association's address: 2860 E. 130th St., Cleveland 20, Ohio. Executive vice president: Orrin B. Werntz.

Aug. 31-Sept. 2, Metallurgical Society of AIME: Institute of Metals Division's conference on semiconductors, Statler-Hilton Hotel, Boston. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: R. W. Shearman.

Sept. 13-17, Pressed Metal Institute: Annual meeting, Stanley Hotel, Estes Park, Colo. Institute's address: 3673 Lee Rd., Cleveland 20, Ohio. Managing director: Harold A. Daschner.

Sept. 13-18, American Chemical Society: Fall meeting, Convention Hall, Atlantic City, N. J. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 14-17, American Mining Congress: Metal mining and industrial minerals convention, Denver. Congress' address: Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

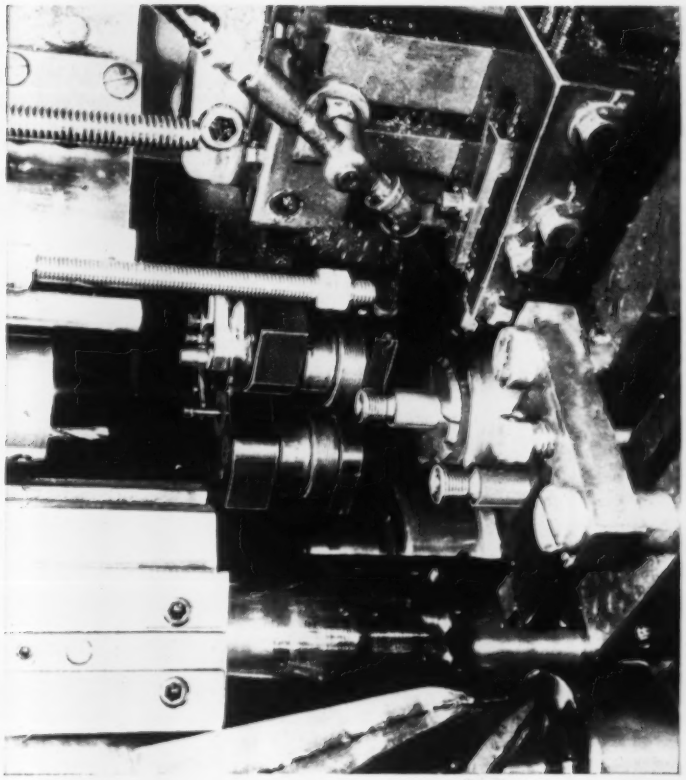
Sept. 14-17, Society of Automotive Engineers: National farm, construction and industrial machinery meeting, production forum, and display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

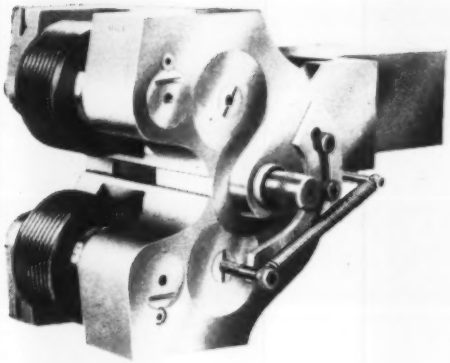
Sept. 16-17, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 16-18, National Industrial Conference Board: Marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

1/2″ taper pipe thread rolled

with the LANROLL attachment





The recently developed LANDIS Method for precision rolling of taper pipe threads is shown at the Mac-It Parts Company, Lancaster, Pennsylvania, in the production of pipe plugs.

½″ 14 pitch American Standard Taper Pipe threads are being rolled $\frac{3}{16}$″ long to dry seal specifications on 4140 steel (207 Brinnell). The #22GA LANROLL Attachment (with a pipe range of ⅛″ to 1″) is used in the third position on a National Acme Bar Automatic—45,000 pieces are threaded with each set of rolls.

To produce the taper, the rolls of the LANROLL Attachment are supported on carbide shafts inclined to the required thread taper. This design enables the use of parallel rolls which reduces slippage between the workpiece and rolls. With reduced slippage, roll life is materially increased. In addition, attachment stabilization (limited sidewise movement) is greatly improved to permit rolling directly to a shoulder with safety.

By simply withdrawing the shank pin, the LANROLL Attachment can be removed to facilitate tooling changes and servicing without disturbing the original set-up. Other desirable features include the use of a gage to safely and precisely determine the attachment's tool slide location in respect to the high point of the machine's feed cam and the ability to use the same attachment to produce straight or taper threads through the use of proper rolls and a limited amount of auxiliary equipment.

For complete information on the LANDIS Method of rolling taper threads and other outstanding design principles, please write and request Bulletin G-96.

491

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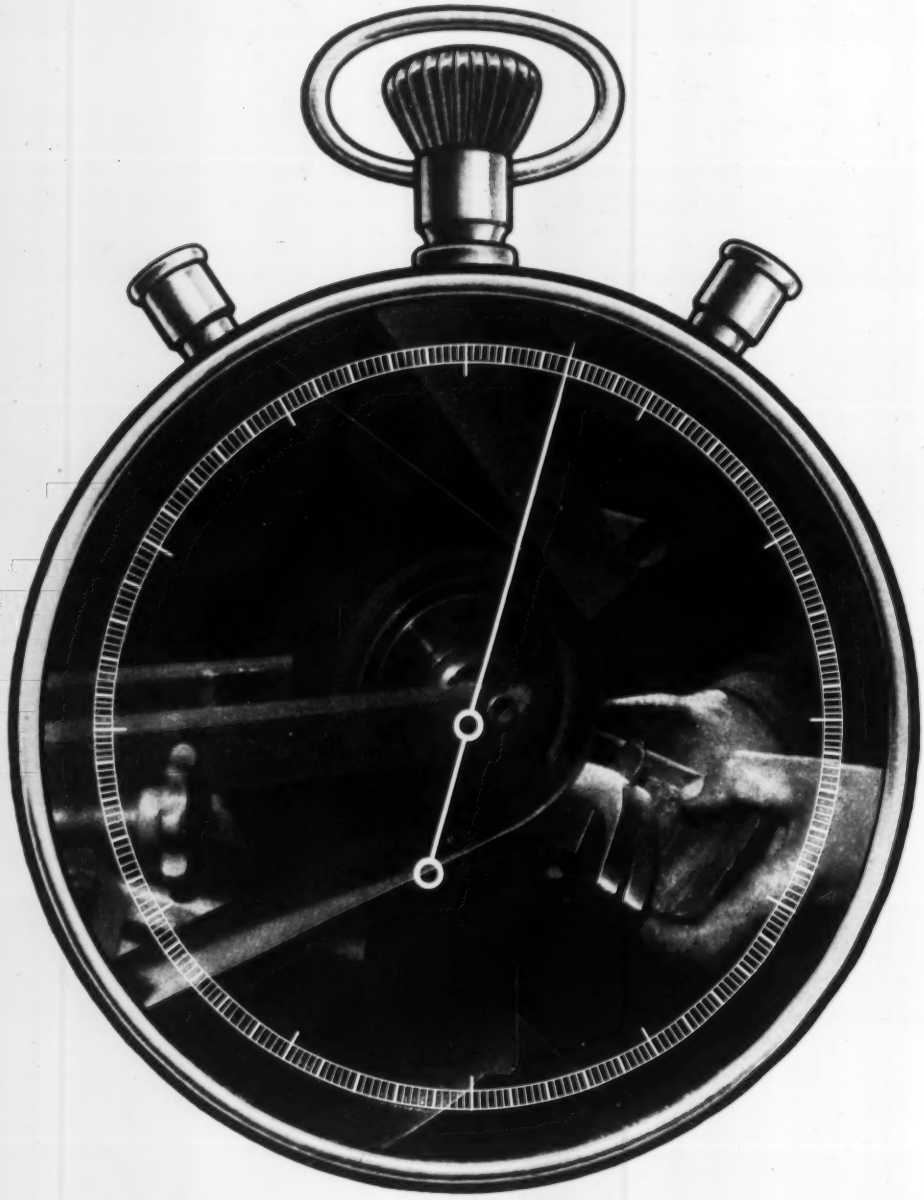

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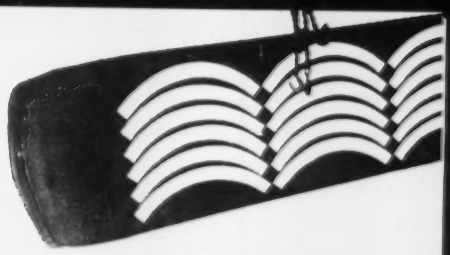
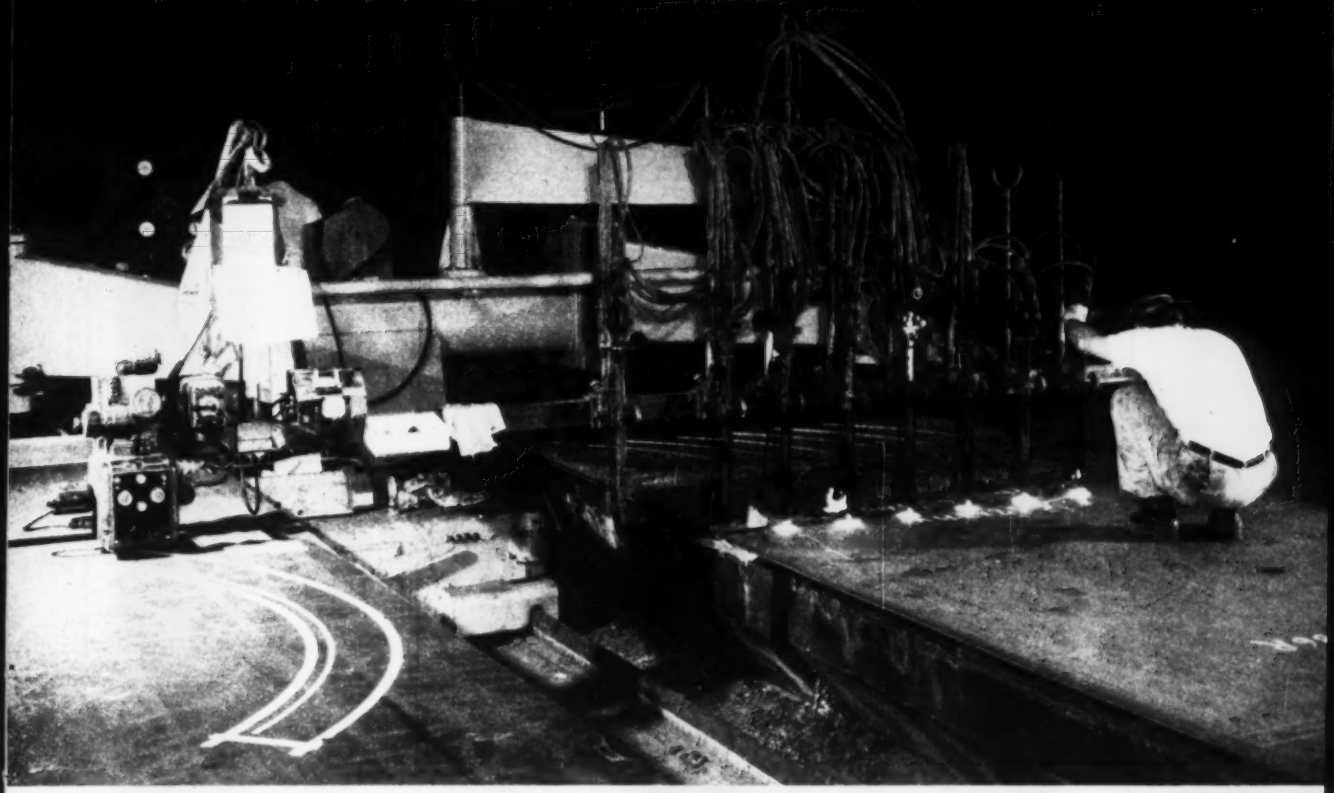


With Airco's Multiple-Torch Flame Cutting Equipment...

MACHINE QUALITY CUTS



Whether it is the warehousing of steel parts for supply to metal-fabricators, or the production of parts by fabricators for assemblies and end products, multiple-torch flame cutting today plays a role of growing importance in modern industry.

"Machine quality" means close-tolerance cuts with equipment such as Air Reduction's Travograph® (shown in action), just one item in Airco's extensive line. It means elimination of plate-edge preparation for close fit-up, reduced handling and reduced labor costs . . .

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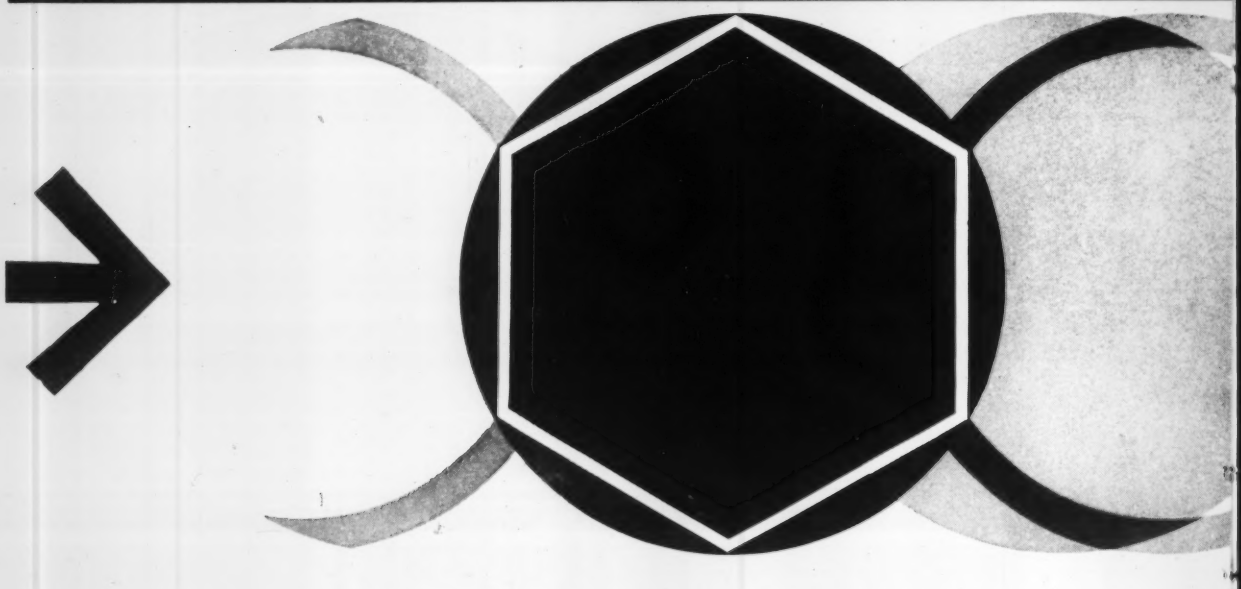

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ADAMS FACT FILE #2

PLANT AIR

Moisture Chief Cause of Trouble . . .

Every company today is looking for ways to offset the increased costs of labor, material, equipment and services. At a gasoline station you expect "Free Air", but in industry it is a major expense. Perhaps in your own plant, for an investment in a few minor compressed air system alterations, significant savings are possible.

Water, sludge, rust, oil and dirt in compressed air systems are prime causes of maintenance and production down-time. Water vapor condensing in air lines tends to corrode the piping. Also, water present in the piping may freeze during winter, causing serious reduction of compressed air supply. Such restrictions are often difficult to locate and thaw. This same line moisture may emulsify lube oil destroying its lubricating value and the resultant mixture has high fouling characteristics. Frequently, ice will form within the tool itself since expanding air cools the moisture . . . tool efficiency will be seriously affected.

Some of the Other Problems Created By Wet Compressed Air . . .

Wet compressed air is not only a construction and production tool problem. Faulty paint jobs, contaminated chemical and food products can often be traced to moisture laden compressed air. Waterhammer, unequal pipeline thermal expansion and line leaks also result from collected moisture. In addition, air lost through traps, and in blow-down of compressed air lines provide no useful work . . . represent a sizeable power loss.

You Can Lick Compressed Air Moisture Problem . . .

All of these hidden costs can be virtually eliminated by the installation of an Adams Aftercooler and Cyclone Separator between the compressor and receiver tank. By cooling discharge air to within 10° F. of cooling water temperature — guaranteed with Adams standard Aftercoolers — the moisture can be removed at the separator. Pressure loss is less than one-half pound on these units including the separator. In severe cases, moisture removal of over 90 per cent can be obtained by cooling the air with Adams 2° Aftercooler to within 2° F. of water temperature.

Air Filter for Final Protection at Point of Use . . .

As an added safeguard for expensive tools and equipment, an Adams Poro-Stone Air Filter should be installed just before the air is used. These filters remove all solid material picked up by the air stream. With an Adams Aftercooler, Cyclone Separator and Air Filters clean, dry, trouble-free air is supplied to your production tools. You get continuous service with minimum maintenance.

For further information on how the complete line of Adams air equipment can solve your compressed air problems, write today for your free copy of Bulletin No. 712 on Aftercoolers and Bulletin No. 117 on Poro-Stone Air Filters from the R. P. Adams Company, Inc., 222 East Park Drive, Buffalo 17, New York.

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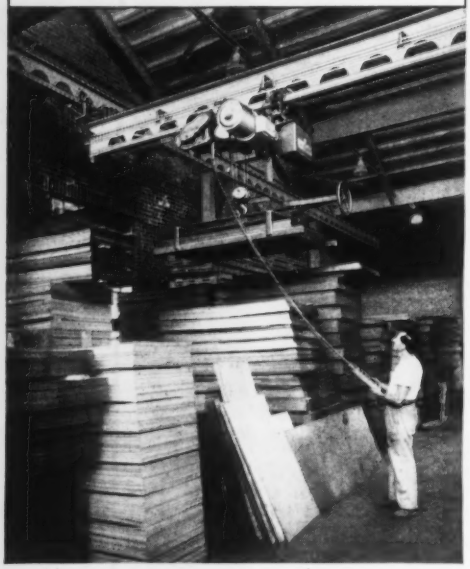
No trick at all to pile the heavy sheets high with a Tramrail crane and hand-operated grab.



TWO cranes on adjacent runways cut the cost of handling sheet steel in the modern warehouse of Eastern Steel Products, Ltd., Toronto. They enable one man to handle heavy packs quickly and make it easy to maintain orderliness.

The Tramrail System permits far more steel being stored in the building because it can be piled high and because wide aisleways required for floor conveyances are not necessary; thus, much of this space can be used for storage.

The overhead Tramrail cranes are always on the job, always within easy reach. They require extremely little maintenance, usually far less than needed for power-driven floor trucks. Further, there is no floor wear with cranes and this alone represents a considerable savings.

Being of the transfer type, the cranes may be interlocked with a common crossover track, permitting a hoist carrier with load being transferred from one crane to the other. Thus, loads can be delivered directly between any points covered by the cranes without in-between handling.

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Republic Cold Drawn Carbon Corrected Bars

BOOST PRODUCTION, IMPROVE QUALITY, MINIMIZE REJECTS

Note the result of induction hardening in the cutaway view at left of a piston pin fabricated from Republic C-1050 Cold Drawn Carbon Corrected and Annealed Bars.

A piston pin manufacturer was experiencing production difficulties and dissatisfaction with pin quality from a performance standpoint.

A Republic 3-Dimension Metallurgical Service Team was invited to work on the problem. A field metallurgist visited the plant. He talked to production men and engineers. Found out what they expected the steel to do. He then reported back to the mill and laboratory metallurgists. The three men discussed the problem, pooling their combined knowledge of steels and machining.

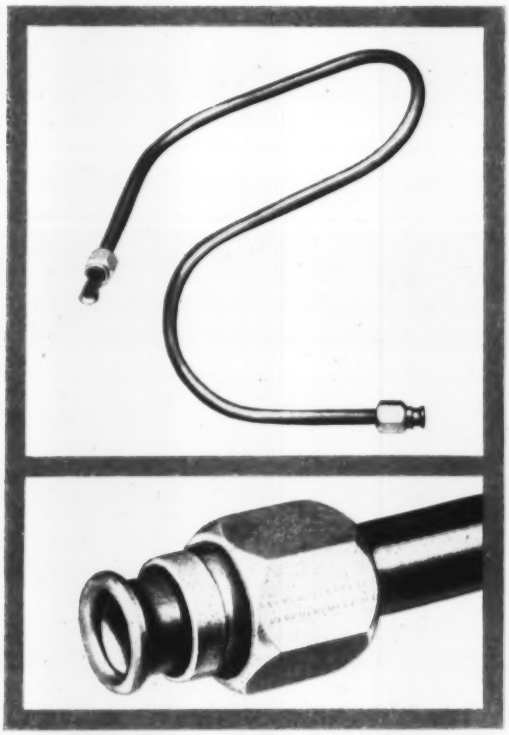
Their final recommendation was a switch from plain cold drawn bars to Republic C-1050 Cold Drawn Carbon Corrected and Annealed Bars. The results were immediate. Production increased substantially. Pin quality improved to the highest level.

The company is also enjoying better machinability and is saving both metal and money by eliminating waste. Carbon Corrected Bars eliminate the extra preparation of machining or grinding away bar surface to remove "decarb." The Carbon Correction Process also eliminates the need for buying bars oversize to allow for decarb removal to depths of 20 thousandths of an inch or more.

Republic Cold Drawn Carbon Corrected Bars are ideally suited for your steel parts requiring high surface hardness —particularly those produced by induction heating.

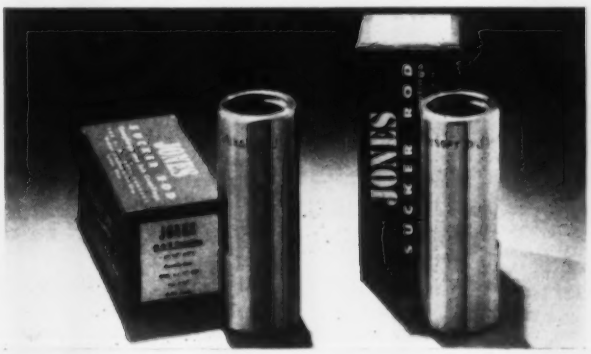
For more information on Republic Cold Drawn Carbon Corrected Bars, or obligation-free 3-D Metallurgical Service, mail the coupon.

GRADER BLADE MANUFACTURER LEVELS OFF COSTS WITH REPUBLIC HOT ROLLED SPECIAL BAR SECTIONS. Shunk Manufacturing Company, Bucyrus, Ohio, has maintained top-quality and its competitive position for over 30 years by using Republic High Carbon Hot Rolled Special Bar Sections for grader blades. The special bar sections are preformed to the predominating cross section of the blade, thus keeping costs down by eliminating most machining and forming operations. Republic Special Bar Sections are available hot rolled or cold drawn in carbon, alloy, and stainless steel. Send coupon for full facts.



YOU GET MORE TUBE PER DOLLAR with Republic ELECTRUNITE® Hydraulic Fluid Line Tubing. Available in all sizes shown in JIC Standards Book. Available in an even wider range of sizes produced to our specification HL-1 (which meets all test requirements of JIC standards). Utmost uniformity assures better bending and flaring characteristics, appreciable savings in downtime. In the *history* of ELECTRUNITE Hydraulic Fluid Line Tubing, no failure resulting from longitudinal or transverse cracks has been reported. Send for complete ELECTRUNITE information, including a copy of specifications.

REPUBLIC COLD FINISHED ALLOY STEEL BARS PROVIDE GREAT STRENGTH, PRECISE TOLERANCE at reasonable cost in the production of sucker rod couplings. The parts must withstand enormous static and dynamic loads, to more than 40,000 psi. Essential to designing smaller sections to carry heavier loads safely is the outstanding combination of qualities provided by alloy steels. Then add the advantages of the cold finishing process . . . you have a material that offers strength, hardness, machinability, size and close-sectional accuracy, smooth bright surface, and close tolerance straightness. Mail coupon for more information.



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Please send more information on:
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☐ ELECTRUNITE Hydraulic Line Tubing
☐ Cold Finished Alloy Steel Bars

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Company _____

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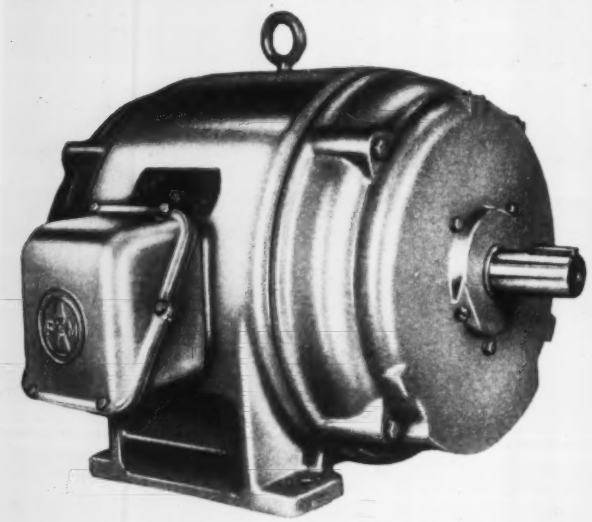
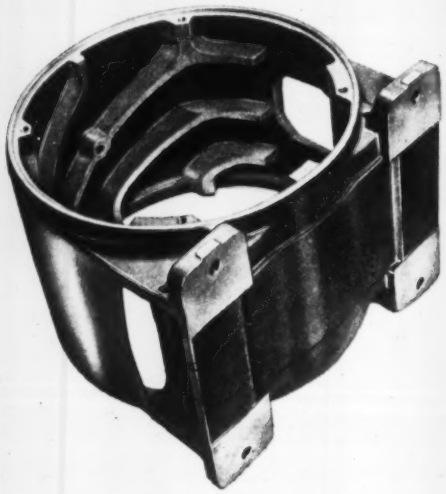
Now—F-M Spiro-duct cooling!



Spiro-duct double-end system: In standard motor shown, air enters shaft end and discharges between feet on conduit box side of motor. Conversely, air entering free end discharges opposite conduit box. In motor with conduit box located opposite to standard position, direction of air flow is reversed in relation to drive shaft location.



Spiro-duct moves cooling air in clockwise spiral direction, through space between stator core and motor frame.

Cools entire core and winding regardless of direction of rotation!

From the research and development laboratories of Fairbanks-Morse comes Spiro-duct cooling—the most effective design available for positive cooling of Dripproof motors—available now in F-M rerated KZK motors, in frames 364U through 445U.

Two completely independent paths for cooling air are provided in the Spiro-duct double-end system. All portions of the stator core and winding are thus assured equal cooling, regardless of direction of rotation.

With completely redesigned and improved enclosure as well as ventilating system, Fairbanks-Morse offers an exceptionally cool motor with maximum protection against falling particles or dripping liquids.

For expert assistance in specifying, write Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Illinois. Fairbanks-Morse motors include all types in alternating and direct current, in ratings from ½ to 10,000 HP.

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IN PRODUCT AFTER PRODUCT AFTER PRODUCT . . . WEIRTON HOT- AND COLD-ROLLED SHEET

Is your product as complicated as automobile sheet metalwork? Or as tough to form as a portable TV cabinet? Or as dependent on good looks as laundry equipment?

Then Weirton hot- or cold-rolled sheet is for you, too. It brings you the triple advantages of uniform gauge, uniform strength, uniform ductility. It holds up under your toughest fabrication steps, helps you turn out a better product at lower cost. And it'll prove itself in your product, just as it has in thousands of others.

Weirton produces top quality sheets to serve the needs of modern fabrication. For prompt and complete information, just phone or write Weirton Steel Company, Dept. B-4, Weirton, West Virginia.

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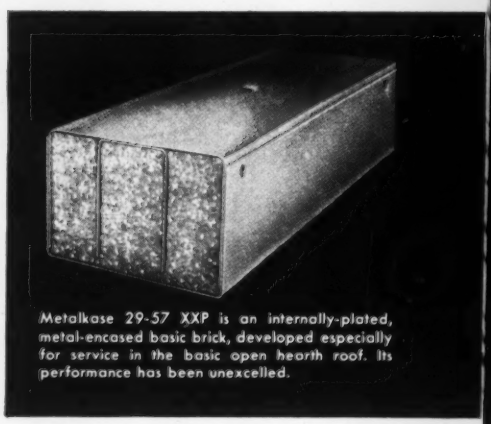
From Harbison-Walker Research came
METALKASE 29-57 XXP
a great contribution to the
ALL-BASIC OPEN HEARTH FURNACE

One of the earliest and perhaps the most important contribution of Harbison-Walker Research to open hearth practice was the introduction in 1916 of METALKASE, the first metal-encased basic refractory brick. This new product opened the way to many advances in steelmaking and millions have been used over the years for side walls, end walls and bulkheads.

Accelerated progress, involving larger furnaces, increased use of oxygen and higher production rates, has intensified the severity of service conditions, especially in the roof. METALKASE 29-57 XXP—the newest refinement of Metalkase—is establishing unmatched records in this exacting service.

Harbison-Walker Research continues its vigorous program dedicated to the development of better, more serviceable refractory products for all industry. With a rich heritage of accomplishment, and the industry's most modern and most complete research facilities, Harbison-Walker Research looks forward to even greater achievements in the years ahead.



Metalkase 29-57 XXP is an internally-plated, metal-encased basic brick, developed especially for service in the basic open hearth roof. Its performance has been unexcelled.

Harbison-Walker Refractories Company

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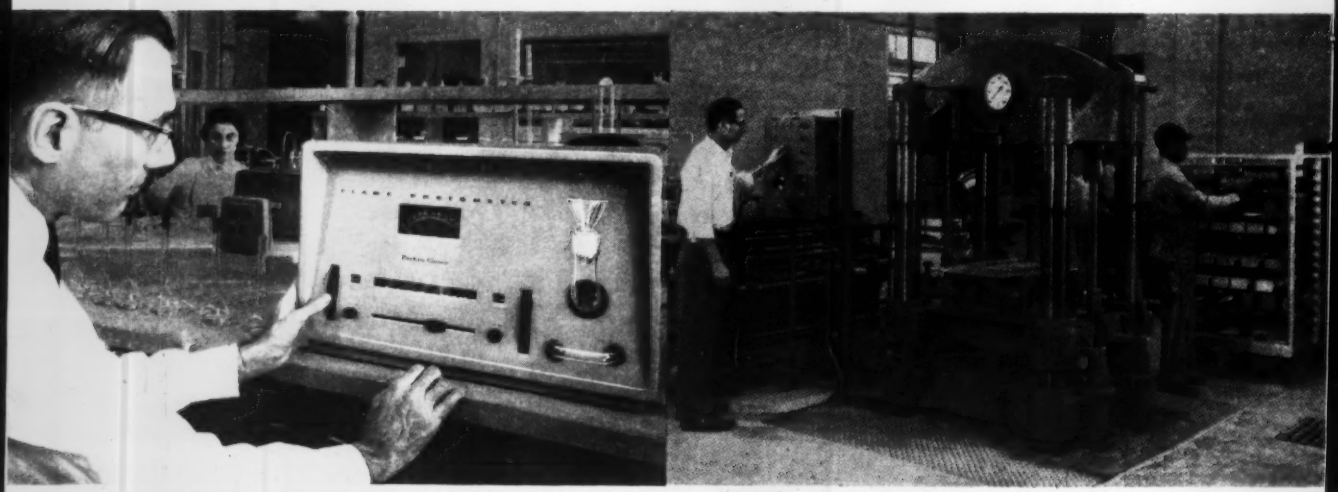


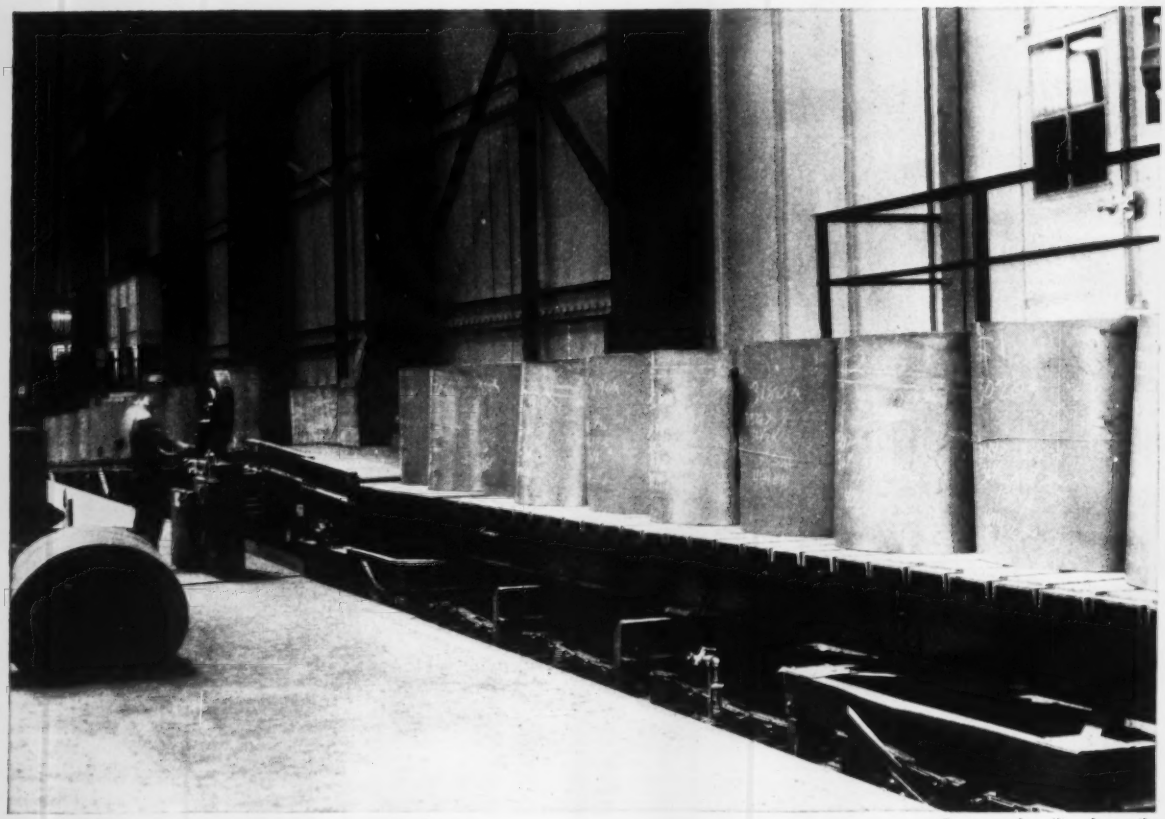
Modern instrumentation has made possible the daily determination and study of refractory elements formerly neglected as unimportant. These studies have led to significant developments in refractories.

Harbison-Walker leads in research on refractory forming methods. This highly instrumented 300-ton press at the Garber Research Center is used to investigate the effect of variations of pressure, speed of forming and other factors.

GARBER RESEARCH CENTER

Leadership in refractories through constant research

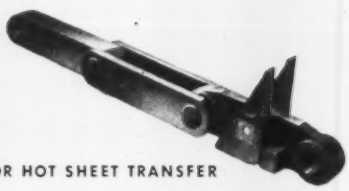
Refractories science is based on studies of minerals whose characteristics and very presence may lead to recommendations which will allow progress to be made in industrial processes. Problems in the steel industry often yield to studies of this nature.



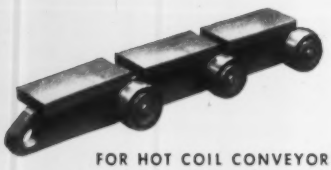
Conveyor handling hot coils

Jeffrey chains keep mills rolling

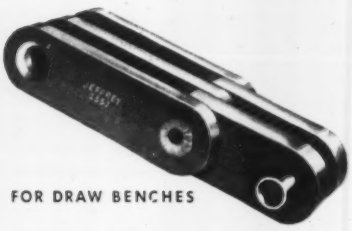
FOR CROP CONVEYORS



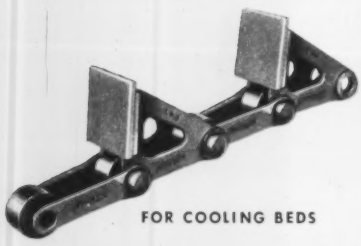
FOR HOT SHEET TRANSFER



FOR HOT COIL CONVEYORS



FOR DRAW BENCHES



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As one of the largest producers of all types of chain, Jeffrey offers "specials" to help steel mills move materials efficiently.

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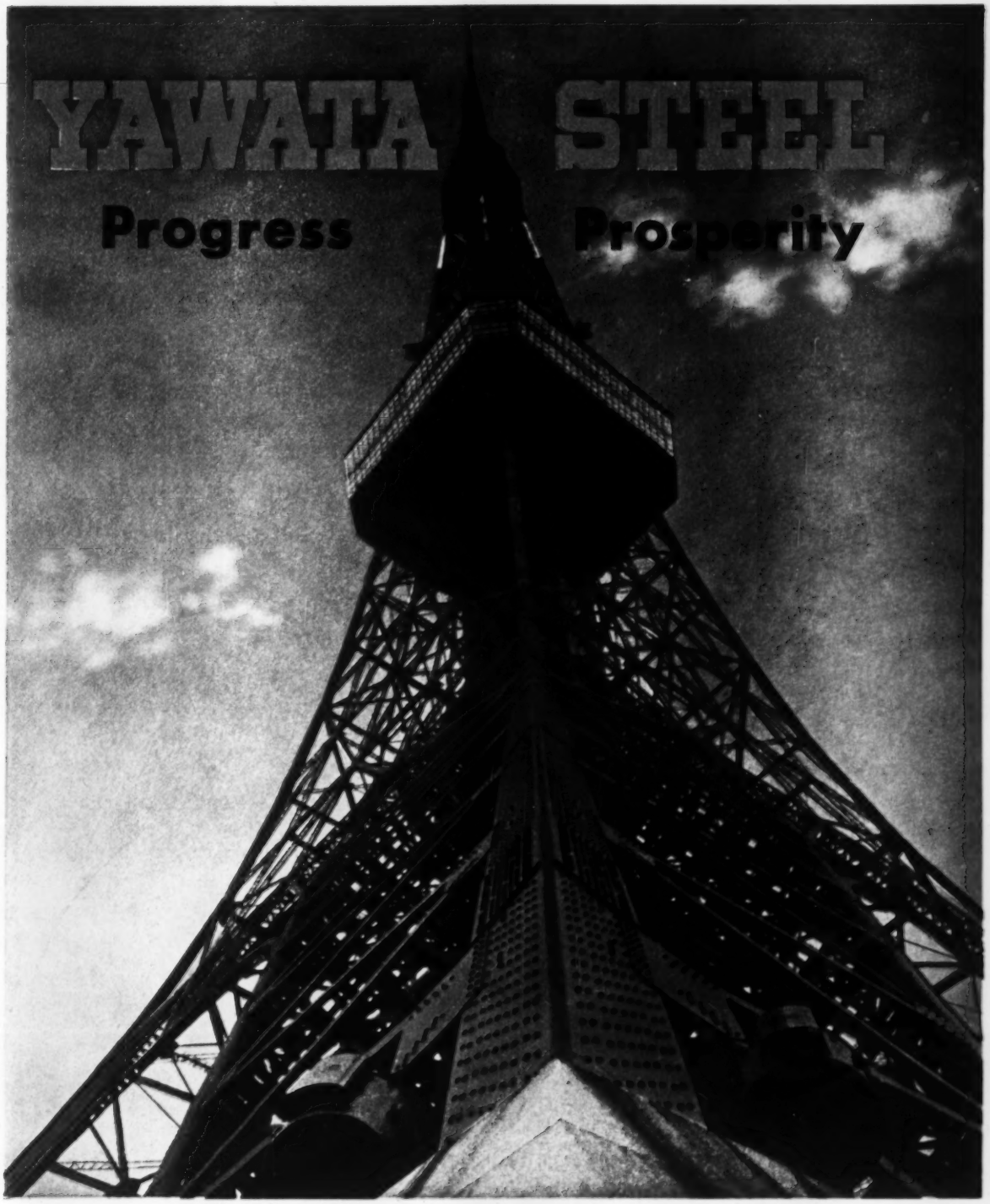

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THE WAY HE ACTS YOU'D THINK THE OLD MAN PASSES OUT CIGARS FOR FIRST TAPPIN'.
YEAH, HE'D RATHER TAP AHEAD OF THE GREEK THAN MAKE FULL BONUS.
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THANKS TO
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The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

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STEEL

Metalworking Outlook

August 3, 1959

Steel Will Hold Price Line if U. S. Stays Out

Labor Secretary James P. Mitchell (picture) is edging into the steel labor situation along with Federal Mediator Joseph Finnegan. Vice President Nixon will probably take a hand in the matter when he returns from Russia. The probable timing for any government action (such as invoking T-H) is late August. But Roger M. Blough, chairman, U. S. Steel Corp., in reporting first half earnings (Page 42), promised that the corporation will hold the line on steel prices if there is a "voluntary" settlement. Will that keep the government from edging farther into the steel talks? (Page 37).

Construction Goes from Record to Record

Look for U. S. construction volume to hit $73 billion this year. It'll exceed $107 billion (in 1959 dollars) by 1970, predicts Associated General Contractors of America. By then, requirements for fabricated structural steel will hit 5,431,000 tons (vs. 3,993,000 tons this year), AGC estimates. July outlays hit $5.2 billion—up 3 per cent from June. In the week ended July 23, heavy construction contracts shot up to $651.7 million, the second highest weekly volume this year, reports *Engineering News-Record*.

Depreciation Reform Chances Get a Lift

Action on depreciation reform next year may get the green light from Capitol Hill. Small business enthusiasts are bending an ear to the pleas of tax experts. Liberals like Sen. Wayne Morse (D., Oreg.) are encouraging industry to speak out. Sen. George Smathers (D., Fla.), at right in picture, heard testimony of men like Maurice Peloubet (at left), partner, Pogson, Peloubet & Co., when his subcommittee held formal hearings on the issue July 24 (Page 44).

Labor Shortage Looms

You'll have more trouble getting good help this fall. Unemployment will decline to about 3 million by October. These types of workers will be especially hard to get: Engineers, physicists, technicians, skilled workers, business ma-

chine operators, and capable young executives. A national survey by Manpower Inc., Milwaukee, finds that 24 per cent of the firms surveyed will boost employment during the third quarter; only 4 per cent look for a decline. Among industries planning big increases: Farm equipment, appliance, machinery, paper, trucking, and warehousing.

The UAW: Reuther Is Its Chief Problem

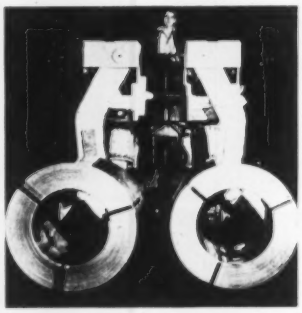
In two years, membership in the United Auto Workers has dropped from 1.5 million to 1.2 million. The union has failed to keep pace with the changing employment needs of the industry. One reason: Walter Reuther seems to have divorced himself from his union's everyday needs. It may be that the UAW has outlived its usefulness for his personal aims. He wants political power. He may be aligning himself with liberals in both political camps to form a labor coalition to control much of the country's social and economic legislation (Page 40).

Enrollment Decline Signals Engineering Shortage

The nation's 223 engineering schools registered only 70,029 freshmen in engineering for the 1958-59 school year—a drop of 11.1 per cent from a year earlier. It's the smallest freshman class since 1954. Total undergraduate engineering enrollment dropped 4.5 per cent to 256,779. Those are findings of a study by the Engineers Joint Council in co-operation with the American Society for Engineering Education.

Material Handling Equipment Orders to Shoot Up

Expect second half orders for material handling equipment to exceed those of the first half by 28 per cent. That's the finding of STEEL's survey of equipment buyers. It points to a continuation of the boom. And it signals rising sales for all metalworking. STEEL also queried major producers of handling equipment. They confirm the upward order trend. But price fighting plagues the industry; price cuts of 5 to 20 per cent are common (Page 52).



Pirating Is Probable

Be on guard against other companies pirating your executives. Demand for them is at its highest point in two years, reports Heidrick & Struggles Inc., Chicago executive recruiting firm. Demand for general administration execu-

tives has climbed 92 per cent since the first of the year. For marketing managers, demand has risen 14 per cent; for personnel managers, 58 per cent; for financial executives, 15 per cent, reports H&S. Capital goods manufacturers are showing an unusually heavy demand for new executives, and many organizations are searching for men who can implement the new marketing concept.

GE Makes Molybdenum More Ductile

The Old

The New

Now you can buy pure molybdenum sheets with greater ductility. Developed by General Electric Co.'s Lamp Metals & Components Dept., the sheets were placed on the market Saturday. You can bend them 180 degrees at room temperature. It means less need for high temperature forming, lowering the cost of moly parts (Page 86).

Appliance Sales to Approach a Record

Expect appliance sales this year to edge near the 1956 record. Factory sales of home laundry appliances in '59's first half were 19 per cent above those in the like '58 period, American Home Laundry Manufacturers' Association reports. Sales of gas dryers set a record. Judson S. Sayre, president, Norge Div., Borg-Warner Corp., predicts that second half sales of washers and dryers will top 2.6 million units (vs. 2.4 million in the first half). Admiral Corp. reports high demand for TV sets, phonographs, and radios.

How Tape Control Pays Off

This dollar sign represents the annual savings ($8594) gleaned by using numerical controlled machining on four jobs at Brown & Sharpe Mfg. Co., Providence, R. I. An automated horizontal boring, drilling, and milling machine saves 25 to 50 per cent of the cost of any other method, B&S officials report. Their conclusion: Tape control is a natural for intermittent production where the work is repetitive but the lot sizes are too small to justify mass production methods (Page 74).

Gas Industry Outlays Hit New Peak

The nation's gas utilities and pipeline companies will spend a record $1.86 billion for construction this year, predicts the American Gas Association. That's 4.9 per cent above the 1957 peak and 14.9 per cent higher than last year's outlays. Spending will continue to rise steadily, reaching $2.17 billion in 1962, AGA estimates. Steel pipe use last year climbed 38 per cent above the

1956 level, but use of cast iron, copper, and aluminum declined. Here's AGA's forecast of metal usage for 1960: Steel—2,589,000 tons; cast iron—54,000 tons; copper—2084 tons; aluminum—54 tons.

More Gas Spending to Come

Willard F. Rockwell Jr., president, Rockwell Mfg. Co., reports that suspended cases before the Federal Power Commission at midyear totaled a record $325 million. "It represents a considerable amount of deferred business that will develop sooner or later," he says. It signals good prospects for pipeline suppliers.

Reliability Concept Boosted at AC

Automakers are expanding their quality control sections to cover total reliability from basic design to the final functioning of parts. GM's AC Spark Plug Div. is one of the first to embrace the systems reliability concept. Lloyd Steward (picture) heads the control group. He believes the concept will reduce warranty costs and improve product quality in today's complex vehicles (Page 55).

Welding Outlook Brightens More

Latest sales figures on resistance welding equipment confirm the upward trend in capital equipment spending. June orders hit $2.65 million, the second highest this year and up from $2.11 million in June, 1958. Shipments climbed to $2.75 million in June, the highest since July, 1957.

Look at This Booming Market

Check the booming swimming pool industry as a market for your goods. The National Swimming Pool Institute predicts 70,000 pools will be installed this year, bringing the number in the U. S. to 250,000 (vs. less than 11,000 a decade ago). It signals a growing market for cabanas, portable radio and TV sets, windbreaks, chairs, and other poolside accessories. Since only 1 in 5 pool builders market such items, you might check the industry for sales opportunities.

Straws in the Wind

Industrial output at midyear climbed to a record 165 per cent of the 1947-49 average, reports the Federal Reserve Board . . . New business incorporations in June hit the highest point (16,157) for any June on record, reports Dun & Bradstreet . . . Dow Chemical Co. will form a new division to fabricate magnesium, aluminum, and other metals . . . Du Pont Co. will build a metallurgical research center in Baltimore to speed development of high temperature metals . . . U. S. exports of motion picture film and equipment set a record in '58.

JACK-HAMMER FAILS TO FLAKE INLAND TI-CO®!

Crumbling concrete is easy with this powerful paving breaker. It hits with crunching impact at the rate of 1,200 blows per minute with 75,000 ft. lbs. of developed energy. Yet, while thousands of repeated blows actually hammered this TI-CO galvanized sheet into the ground at the point of contact, there wasn't a trace of flaking of the zinc coating!

More proof that you can subject TI-CO sheets to deep-drawing, spin-drawing, punching, crimping, perforating, Pittsburgh lock-seaming or any other tough fabricating process, and you won't flake TI-CO!

That's why Inland TI-CO galvanized sheets are now being used in scores of new applications and products. TI-CO is available in cut sheets or coils in gages 8 to 30 inclusive and widths as great as 60 inches. You can get it with dry, oiled or chemically treated surfaces to meet your production needs. A free, informative booklet will be sent you upon request. For your galvanized sheet requirements, consult your Inland representative.

Hammer operator runs finger around depression made in TI-CO sheet. Although hammered area resembles a shot-peened finish, the zinc coating has not flaked

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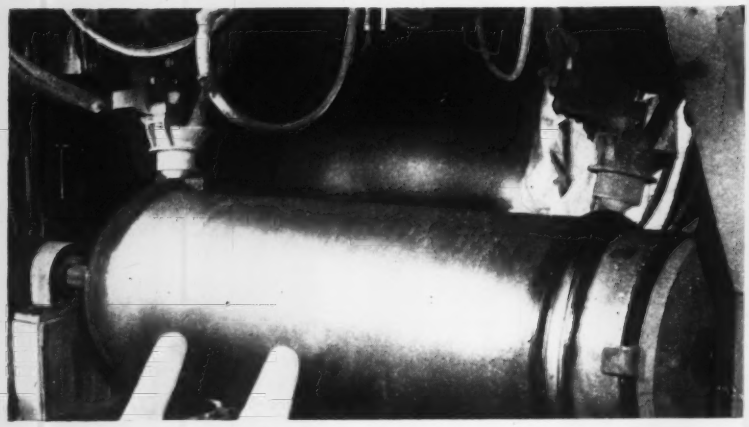

New steels are born at Armco

Armco High Strength No. 4 meets ICC requirements for this 100-pound capacity LP Gas cylinder. It's easily brazed and welded, too.

Because long service life is so vital in railway cars, Armco High Strength Steels No. 1 and No. 2 are specified for many key parts.

Choose from 4 economical grades of Armco High Strength Steel

All four low-cost grades of Armco High Strength, Low-Alloy Steel offer strength with light weight in fabricated parts. Each grade supplies a specific combination of mechanical properties, corrosion resistance, and workability to meet individual product needs.

ARMCO HIGH STRENGTH STEEL	ULTIMATE TENSILE STRENGTH psi	YIELD STRENGTH psi	ATMOSPHERIC CORROSION RESISTANCE	OTHER CHARACTERISTICS
No. 1	70,000 (minimum)	50,000 (minimum)	4 to 6 times that of mild steel	Holds paint well—Excellent weldability—For applications where fabrication is limited to flanging and light forming.
No. 2	64,000 (typical)	45,000 (typical)	Equivalent to No. 1	Holds paint—welds as well as No. 1, but is more workable.
No. 3	60,000 (typical)	40,000 (typical)	Equivalent to mild steels	Designed for drawing—Surface suitable for plating with proper preparation.
No. 4	70,000 (minimum)	50,000 (minimum)	Equivalent to copper-bearing mild steel	Suitable for limited forming or flanging—Lowest in cost of the four grades.

ARMCO STEEL CORPORATION
2789 Curtis Street, Middletown, Ohio

Send me more information about these Armco High Strength Steels:

☐ No. 1 ☐ No. 2 ☐ No. 3 ☐ No. 4

We make _____

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Plan for Long Steel Strike!

On Apr. 20, we made two predictions: 1. The chances were 99 to 1 that USW President David McDonald would pull his steelworkers off their jobs June 30. 2. The strike could last nine weeks, or until after Labor Day.

The two week contract extension, not anticipated in April, enhanced the prospects for a long strike. It also gave consumers an opportunity to take in more steel, so that today they have nearly 21 million tons—equal to average mill shipments for four months in 1958, or three months in 1957.

In addition, consumers can draw on industrial steel stocks of 3.6 million tons at steel service centers, 1 million tons a month from nonstruck mills, and imports of 400,000 tons a month.

Except for spot shortages, few consumers will get hurt until after Labor Day. The big pinch, if the strike lasts long enough, will come in flat rolled steel products, especially galvanized sheets.

So pressure for a strike settlement from consumers within the next four weeks is unlikely.

Steelworkers, with some of their last pay checks, vacation money, and SUB payments still in their pockets are not yet in a mood to exert pressure on McDonald for a new contract.

The unknown factor, of course, is the government. In aspiring for the vice presidency in 1960, Secretary of Labor James P. Mitchell would like to be the hero effecting a quick settlement.

The secretary has the sympathetic ear of the President. But the President cannot insist on a wage package satisfactory to the USW without retreating from his firm position on the evils of wage-price inflation.

Negotiations arranged by Federal Mediator Joseph F. Finnegan between the Steel Industry Coordinating Committee and the USW have gotten nowhere.

So the situation as it affects steel, aluminum, other metals, and related industries adds up to this: Recheck your current sales commitments in relation to production schedules and material requirements.

You can't lose by planning for a long steel strike!

Irwin H. Such

EDITOR-IN-CHIEF

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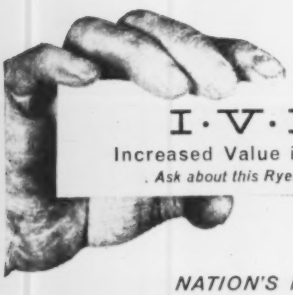
Now you can get complete, *coast-to-coast* service on highest quality aluminum from the nation's largest supplier of metals from stock—Ryerson service on Reynolds aluminum. A much broader range of types, shapes and sizes than ever before is ready for immediate shipment—including building products. For help on selection and fabrication problems of any kind—*call Ryerson.*



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NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

Strike Losses Mount

Lost Steelworker Wages

$208,000,000

through Aug. 3

Lost Steel Sales

$588,000,000

through Aug. 3

Lost Steel Production

5,662,000 ingot tons

through Aug. 3

Other Losses

Overhead, depreciation, and salaries of nonproduction workers in steel.

$112,000,000

through Aug. 3

These men will play increasingly important roles. Above, Labor Secretary James P. Mitchell. Below, Federal Mediator Joseph F. Finnegan

U.S. Edges Farther into Steel Talks

HOW SOON will Washington begin in earnest to pressure the steel industry and union for a strike settlement?

The best answer: Late August. For precise timing, the President will rely upon the advice of Labor Secretary James Mitchell and Federal Mediation & Conciliation Chief Joseph Finnegan. When Vice President Nixon returns from Russia, he'll have a hand in the matter.

• **On Firing Line** — The government's representative most in the thick of things is Mr. Finnegan. His agency entered the dispute on its own initiative, as it is legally able to do. One of Mr. Finnegan's people candidly admits: "We are out of ideas. We try to help the parties get together, but if they don't want to mediate, they don't have to."

Mr. Finnegan reports directly to Secretary Mitchell on the progress of his efforts. The secretary conveys that information to the Presi

dent. Mr. Mitchell also acts as a "fact finder" for the President, although the extent to which he is searching for new facts is not clear. His major role is probably to act as the President's confidential emissary to both sides.

• **What U. S. Will Do**—The government wants the strike settled without any official action on its part, such as invoking the 80 day cooling off period under Taft-Hartley. But if behind-the-scenes diplomacy can't bring peace within a month, the Administration will feel itself forced to do something more drastic—perhaps invoke T-H.

In another steel strike area, the U. S. is already moving more directly. To insure that available steel supplies are channeled to defense purposes, the Business & Defense Services Administration has written to the companies still operating reminding them "of the obligations of your company under the Defense Materials System, which require preferential treatment in filling orders for controlled materials." (see STEEL, June 29, p. 56.) A telegram to firms handling defense orders requests weekly reports on acceptance of orders for controlled materials for delivery in September, October, and November. BDSA also has a watchdog committee keeping an eye on warehouse stocks. They're adequate thus far.

The U. S. is vitally involved in the steel strike for still another reason—taxes. Treasury Secretary Robert Anderson says up to $30 million a week will be lost from income taxes not paid by the primary steel companies while the steel strike lasts. He also figures a loss of another $10 million a week in income taxes not paid by the steelworkers. Finally, he calculates $5 million will be lost every week from income taxes not paid by companies and workers in other industries affected by the strike, such as coal, rails. Total loss: $45 million a week.

• **Steel Positions Unchanged** — As of last week, the industry's bargaining position was unchanged: No net increase in employment costs. In announcing its good first half earnings (see Page 42), U. S. Steel Corp. reiterated that it would not boost prices if it could get a "voluntary" settlement.

U.S. Strike Doesn't Worry Canada Firms

THE CANADIAN STEEL industry is not too concerned over the U. S. steel strike. It may cause some inconveniences but is not expected to have any serious effect on dominion industrial activity. In fact, there is a possibility that Canadian producers may have a surplus of finished steels which could be shipped to the U. S.

Large expansion programs since World War II have enabled Canada's domestic production to take care of a greater part of the country's requirements. The nation imports about 25 per cent of its steel needs (around 1 million tons), chiefly from the U. S. The bulk of the materials is not made in Canada.

Several Companies Get Extensions

CONTRACT EXTENSIONS have permitted the steel industry to hold its operating rate fairly steady at around 13 per cent of capacity since the United Steelworkers called their general walkout on July 15.

Of the 16 companies with an expiration date of July 31, all but six had been granted at least a two week extension at press time. Two or three doubted that agreement would be reached in time to avoid a strike.

Most of the other 50 or so companies still operating (STEEL, May 25, p. 89) are either non-USW or are working under extensions granted at the beginning of the strike.

In the meantime, another producer has been added to the active list. Acme Steel Co., Riverdale, Ill., has officially started its cupola oxygen converter steelmaking plant, with annual capacity of 450,000 ingot tons.

Steel Producer	Plant Location	Annual Tonnage	Situation on July 29
Alan Wood Steel Corp.	Ivy Rock, Pa.	800,000	Application for extension pending. Started banking furnaces.
Braeburn Alloy Steel Corp.	Braeburn, Pa.	20,730	Working under extension of contract which expired on June 30.
A. M. Byers Co.	Ambridge, Pa.	90,000	Contract extended to Aug. 31; day-to-day basis thereafter.
Carpenter Steel of New England Inc.	Bridgeport, Conn.	84,000	Contract extended to Aug. 14.
Continental Steel Corp.	Kokomo, Ind.	420,000	Contract extended to Aug. 14.
Colonial Steel Co.	Monaca, Pa.	30,000	Contract extended to Aug. 14.
Granite City Steel Co.	Granite City, Ill.	1,440,000	Indefinite extension.
Heppenstall Co.	Pittsburgh	55,550	Plant shut down for vacation, Aug. 1-14. Application for contract extension beyond Aug. 14 pending.
Joslyn Mfg. & Supply Co.	Ft. Wayne, Ind.	37,500	Contract extended to Aug. 14.
Latrobe Steel Co.	Latrobe, Pa.	24,000	Contract extended to Aug. 14.
Lukens Steel Co.	Coatesville, Pa.	930,000	Application for extension pending.
Northwest Steel Rolling Mills Inc.	Seattle	53,000	Application for extension pending.
Oregon Steel Mills	Portland, Oreg.	150,000	Contract extended to Aug. 14.
Southwest Steel Rolling Mills	Los Angeles	45,000	Application for extension pending.
Union Electric Steel Corp.	Carnegie, Pa.	25,000	Contract extended to Aug. 14.
Wisconsin Steel Div., International Harvester Co.	Chicago	1,200,000	Progressive Steel Workers of America voted to strike Aug. 1 unless agreement is reached. Negotiations for extension in progress.

With ample strike warning, most users of U. S. goods were able to build stocks to guard against the emergency.

• **Deliveries Good**—Mills have opened books for the fourth quarter on flat steel products. Bookings have been fairly active, though not excessive. Hot and cold rolled and galvanized sheets are on allocation. Other lines are readily available.

Nonferrous Labor Peace Hopes High

ALUMINUM CONTRACT extensions probably mean no strike. Eventual settlement will be modeled after whatever is done in steel.

The unions and major aluminum companies will extend contracts until after the steel dispute is settled as predicted in STEEL (July 13, p. 52). If the United Steelworkers and aluminum producers haven't reached a settlement by Nov. 1 or 30 days after the end of the steel strike, whichever is earlier, existing agreements may be terminated by either party on ten days' notice. The effective date of any wage or fringe benefit gains that become effective in the first year of the new contract will be retroactive to Aug. 1.

• **Similar Pacts**—Last week Aluminum Co. of America negotiators signed a similar pact with the Aluminum Workers International Union, the other big union in aluminum. As STEEL went to press, Reynolds Metals Co. was ready to offer AWIU a similar extension agreement. Kaiser Aluminum & Chemical Corp.'s contracts with AWIU don't expire until Oct. 31. Other aluminum unions are expected to go along with the extension.

Ormet Corp. and Olin Mathieson Chemical Corp. were also expected to sign extensions with the USW. The other three domestic producers (Anaconda Aluminum Inc., Revere Copper & Brass Inc., and Harvey Aluminum Inc.) aren't affected.

• **Copper Watches Steel**—The biggest union in copper is the International Union of Mine, Mill & Smelter Workers, although USW represents some plants. Mine-Mill is meeting tomorrow (Aug. 4) in Denver to decide what to do. It has been working without contracts, most of which expired by July 1. Odds are that nothing will be done until steel settles. But if the union sees no hope of progress, it may order a strike, probably for after Aug. 15.

• **Lead, Zinc Follow Copper**—The situation in lead and zinc is almost identical with copper's. Most contracts are with Mine-Mill, a few with USW. Most that are up for negotiation expired June 30.

Mine-Mill's Denver meeting tomorrow on copper is also a key to lead and zinc. Many copper companies produce the other metals.

New Jersey Zinc Co. recently signed with the USW at two facilities for 8 cent hourly boosts in wages and fringes. But observers doubt that the action sets a precedent.

May: Sixth Straight Import Record

FOREIGN STEEL producers sent a record volume of steel mill products (384,787 net tons) into the U.S. in May, widening the gap over exports to the greatest monthly margin ever attained, reports the American Iron & Steel Institute. The May total was 25,000 tons over April's.

Steel mill exports, lagging behind imports for the sixth consecutive month, dropped to 165,856 tons.

Leading the climb in May, AISI reported, were: Concrete reinforcing bars (93,136 tons), plain structural shapes (79,308), steel pipe and tubing (35,430 tons), wire rods (41,550 tons), carbon bars (25,199 tons), round and steel wire (25,341 tons), and wire nails (22,252 tons). Primary sources were Belgium, Luxembourg, West Germany, France, and Japan.

Imports totaled 1.5 million tons in the first five months of this year, topping any full year between 1954 and 1957. The five month export total was 850,747 tons. Imports of mill products zoomed 224 per cent while exports dropped nearly 37 per cent.

The Gulf Coast led the U.S. as an importer in May, bringing in 118,351 tons. Atlantic Coast imports hit 117,212 tons. Some 85,173 tons came into Great Lakes ports and Canadian border areas. The West Coast imported 53,717 tons. Another 10,334 tons entered Puerto Rico, Alaska, and Hawaii.

Import-Export Gap Widens

	Imports (Net tons)	Exports (Net tons)
May, 1958	118,094	244,622
May, 1959	384,787	165,856

The UAW: Walter Reuther Is

At a time when the UAW (like all metalworking unions) is struggling with new management attitudes and techniques in bargaining, its president, Walter Reuther, is showing less interest in day-to-day labor problems and more in broad political, social, and economic plans. Here's what this situation means to management—the second in a four-part series on labor's reactions and probable moves to counter new bargaining ground rules and economic conditions.

WALTHER REUTHER:
Has he lost touch with rank and filers?

IT HAS BEEN 22 YEARS since the bitter Kelsey-Hayes Co. strike when redheaded Walter Reuther uttered his classic remark: "Hell, I can't get 'em back to work until I get 'em organized!" Since then his United Autoworkers has become one of the country's most potent political and economic groups.

In 1937 and 1938 when the UAW was getting started, Mr. Reuther was fighting for 75 cents an hour for 350,000 workers. In 1957, the union boasted 1.5 million members. Straight time hourly earnings now average $2.67, second only to steel wage rates. The union figures its current net worth is around $30 million—more than the valuation of many firms employing its members.

• **Years Speed By**—But cracks are appearing in the UAW's solidarity. Mechanization has created additional jobs, but many of the workers aren't skilled enough to fill them. Membership is down to 1.2 million. And Walter Reuther seems to have divorced himself from his union's everyday needs. It may be the UAW has outlived its usefulness for his personal political and social aims.

• **UAW Must Recruit**—Like any other business, the union needs more money to grow on. Dues constitute its principal source of income. But the group of workers who once made up the backbone of the UAW's membership isn't growing as fast as the economy.

Another area, whitecollar employment, is burgeoning. Its rising trend line intercepted the declining line of manufacturing employees for the first time in 1956 and 1957. More clerical and technical people are being hired as technology increases and the economy expands. Leonard Woodcock, union vice president, says the shift from blue to whitecollars is about 1 per cent a year in the aircraft industry—it employs 730,000 UAW workers.

• **Whitecollar Aims**—To shore up its sagging membership and to keep pace with mechanization, the UAW plans to drive deeper into clerical and technical ranks. Just under 6 per cent of its members are whitecollarities (see STEEL, June 22, p. 40).

Chances of membership raids on AFL craft unions aren't promising. They might worsen the already un-

Its Chief Problem

HIS UNION:
Must get more members, hold on to the ones it has

easy AFL-CIO coalition and doom Mr. Reuther's chances to succeed George Meany as president. While the UAW will try to organize workers in the South, it isn't apt to do so with enthusiasm. Too many of them fall into categories the union feels are on the decline.

Look for the vertical trade union to swing gradually toward compartmentalized crafts. Its revitalized skilled trades council is evidence of the shift in organizing emphasis. This will create more bargaining pressure for job classification changes and special representation rights.

• **Reuther and Politics**—Loss of members through mechanization is only part of the UAW's problem. Beyond this lies what appears to be a growing schism between Walter Reuther's interest in the day-to-day needs of the union members and his grandiose political, economic, and social schemes. In a candid moment, one of his lieutenants remarked: "Walter sometimes seems to be losing touch with the boys. He has become an international authority on economics. But members are more concerned about who's going to help them fill out unemployment compensation claims."

It has never been openly admitted at Solidarity House, the union's headquarters at Detroit, but Mr. Reuther wants political power. Those who have watched his rise believe he'd like to be the man who pulls the strings behind the President. At one time the UAW was grooming Michigan's governor, G. Mennen (Soapy) Williams, for the job, but his chances seem pretty dim now. Lately the union's radio voice, Guy Nunn, has been warbling about Minnesota's Hubert Humphrey.

• **Reuther's Future**—Mr. Reuther may be aligning himself with liberal leaders of both parties to form a strong labor coalition which could control much of the country's social and economic legislation. As bossman of the AFL-CIO, he would get an important step up. Insiders believe that is his next goal.

Is Mr. Reuther a socialist? Not in the classic sense. A decade ago he said: "Unless we get more realistic distribution of America's wealth, we won't get enough to keep this (economic) machine going. . . . If fighting for it is socialistic, I stand guilty of being a socialist!"

• **Jousts with Windmills**—Not many management men share the union leader's dream of economic equality for all, but few doubt his sincerity. That factor, coupled with his driving, personal ambition, makes him a potent threat politically.

What happens to the UAW as its headman continues to joust with economic windmills? Where it's practical, there's no doubt that Mr. Reuther will use his union as a lever to achieve his broader aims. One example: He's currently interested in establishing community health centers to provide low cost medical care for everyone. They could be financed by borrowing from UAW pension funds. While indications are strong that workers would prefer to have the funds untouched for security's sake, look for the union to apply pressure to free those dollars when the 1961 bargaining sessions roll around.

• **Union Goals Change**—Sometime in the sixties, look for Mr. Reuther to step up and leave the UAW in the hands of a successor. Likeliest candidate today is British educated Leonard Woodcock, head of the UAW's GM Div. He's shrewd, intelligent, and tough. Some believe

he could open a new era of "practical" bargaining for the UAW.

No matter who's running the outfit, you can expect contract talk to center more and more on fringe benefits and job classifications. Workers are learning that direct wage increases mean price increases. They still haven't realized that indirect benefits also cost money. Their education should improve as inflation continues.

Here are a few of the demands for 1961 that look likely: Broader escalation clauses for pension payments. Greater seniority protection and multiple duty job classifications for unskilled workers. More representation for skilled employees. Increased Supplemental Unemployment Benefits as protection against layoffs. Improved transfer rights for job relocations.

• **Management Growing Up**—While the demands and the UAW itself are changing, so are the men who face them. In 1958, the auto companies for the first time put up a united front that stymied the union. For the first time, management presented demands of its own. Such tactics will continue. Ken Porter, research director, Employer's Association of Detroit, explains why: "Unions are skilled in collecting and pooling information to use against individual companies. Management finally is realizing that it must combine its forces if it wants to compete successfully at the bargaining table."

But no matter what troubles the UAW faces today, it has won the right to represent workers in their day-to-day problems. John Bugas, Ford Motor Co.'s industrial relations vice president, says this: "With all its imperfections, collective bargaining is the only process we have been able to hit upon to resolve disputes between management and its employees in a manner consistent with our ideals of individual freedom.

"I anticipate that there will continue to be an adequate supply of problems and differences between management and organized labor covering terms and conditions of employment. Moreover, I believe that the great bulk of these hourly employees will continue to be represented by the UAW or whatever name the organization may have at that time."

'59: Record Profit Year?

Earnings Outlook for Second Half:

Upward Forces . . . Will Overpower . . . Downward Influences

Strong demand	**Labor problems**
Better inventory balance	**Price fighting**
Some price firming	**Foreign competition**
Pickup in capital spending	**High taxes**
Buyer confidence	**Tight money**
High operating levels	**Poor depreciation**
Record employment	**Cost increases**
Government spending	**Vacations**

METALWORKING will have record profits in the second half and for the full year if the steel strike is settled by mid-August. It'll have a chance for a record if the settlement comes by Labor Day.

The recovery has developed into a boom so rapidly that many companies will double or treble their last year's profit performance. The earnings of many firms hit all-time highs in the first half.

STEELMAKERS won't match their record first half earnings in the second half. The strike threatens to cause some firms to show losses for the third quarter. It takes a while to make up the $8 million per day that the industry is losing in overhead, depreciation, and salaries of nonproduction workers. And shutdown and startup expenses cost the industry around $40 million.

A record fourth quarter is probable, though, as the producers rush to meet pent-up demand. Inventories will have vanished.

• **Behind the Upturn**—David McDonald is pointing to steel's record first half profits as proof that the industry can afford to grant his steelworkers a big wage hike. But steel management is reminding him that the record earnings resulted from record first half sales. And much of the demand was artificial as customers stocked up in anticipation of the strike. Another point: At high operating levels, profits rise proportionately faster than sales, due to lower unit costs of marketing, distribution, and other nonproduction activities. And the industry still maintains that its profit margins are inadequate compared with those of some other industries. And it needs higher capital expenditures and bigger R&D budgets—which must come from profits.

• **The Outlook**—Metalworking's third quarter profits can match those of the second quarter, despite the traditional seasonal slump—if steel shortages do not develop. A fourth quarter record seems certain.

• **For Aircraft**—This industry will better its year ago showing but won't set a record. Sales are rising, but high research and development costs plus continued renegotiation refunds hold profits down.

• **For Automotive**—Many firms in the industry had record profits in the second quarter. The third quarter traditionally brings a slump due

Metalworking's First Half Profits Soar . . .

(Net Profits)

SELECTED COMPANIES	1959	1958
Air Reduction Co. Inc.	$7,817,122	$6,556,383
Allis-Chalmers Mfg. Co.	5,314,739	8,611,204
Aluminum Co. of America	28,936,333	19,471,908
American Brake Shoe Co.	5,009,800	2,525,249
American Machine & Foundry Co.	8,348,000	4,679,041
American Motors Corp.	(1)49,599,962	(1)14,583,416
Baldwin-Lima-Hamilton Corp.	2,674,251	1,878,096
Bliss & Laughlin Inc.	1,719,229	470,497
Budd Co.	8,976,000	700,376
Buffalo Forge Co.	247,719	325,117
Caterpillar Tractor Co.	28,863,689	14,732,767
Central Foundry Co.	610,262	390,308
Chance Vought Aircraft Inc.	3,087,786	4,748,226
Chrysler Corp.	58,000,000	(a)25,200,000
Clark Equipment Co.	6,732,702	2,655,448
Continental Can Co. Inc.	19,267,000	16,958,000
Cooper-Bessemer Corp.	2,264,560	1,531,562
Cutler-Hammer Inc.	3,521,247	2,198,627
Douglas Aircraft Co. Inc.	(a)15,009,920	12,644,812
Ducommun Metals & Supply Co.	1,082,198	565,550
Eaton Mfg. Co.	10,055,302	4,400,942
Ekco Products Co.	2,026,703	1,357,712
Electric Auto-Lite Co.	5,150,288	1,283,550
Electrolux Corp.	1,457,023	944,348
Ex-Cell-O Corp.	3,216,054	5,386,916
Ferro Corp.	1,789,000	783,000
Ford Motor Co.	285,900,000	16,100,000
Freeport Sulphur Co.	6,871,375	5,933,275
General Bronze Corp.	531,105	261,182
General Electric Co.	117,239,000	103,381,000
General Motors Corp.	590,000,000	334,000,000
General Steel Castings Corp.	1,138,471	1,333,861
Hanna (M. A.) Co.	6,082,857	5,150,504
Harbison-Walker Refractories Co.	5,556,198	3,152,233
Hupp Corp.	1,027,000	733,000
Hussman Refrigerator Co.	973,951	803,540
IBM Corp.	64,030,809	50,597,655
International Resistance Co.	927,601	(a)71,248
Johns-Manville Corp.	14,920,000	8,701,000
Kaiser Aluminum & Chemical Corp.	13,222,000	11,833,000
Kennecott Copper Corp.	47,760,040	22,959,071
Kawneer Co.	657,000	231,598
Lithium Corp. of America Inc.	442,587	408,688
Mack Trucks Inc.	7,882,493	3,219,739
Manning, Maxwell & Moore Inc.	666,000	873,000
Maytag Co.	6,657,435	3,390,990
Minneapolis-Honeywell Regulator Co.	12,285,696	8,955,587
Monarch Machine Tool Co.	138,663	142,717
Motor Wheel Corp.	831,933	(a)13,446
National Acme Co.	804,899	443,911
National Cash Register Co.	8,088,417	7,244,557
National Lead Co.	26,811,790	20,920,545
National Malleable & Steel Castings Co.	1,848,618	55,061
National Research Corp.	(a)100,534	(a)197,875
New York Air Brake Co.	1,168,484	113,367
Pendleton Tool Industries Inc.	584,505	488,278
Porter (H. K.) Company Inc.	4,058,249	1,249,758

SELECTED COMPANIES	1959	1958
Radio Corp. of America	$19,400,000	$13,500,000
Reynolds Metals Co.	19,768,937	19,210,266
Robertshaw-Fulton Controls Co.	3,085,114	1,437,506
Rockwell-Standard Corp.	10,553,837	3,469,449
Screw & Bolt Corp. of America	489,105	(a)195,655
Signode Steel Strapping Co.	2,625,515	1,389,728
Simonds Saw & Steel Co.	2,815,353	931,191
Square D Co.	3,860,000	2,655,779
Stewart-Warner Corp.	3,769,864	2,276,283
Studebaker-Packard Corp.	12,073,281	(a)13,314,164
Sundstrand Corp.	1,789,431	1,546,252
Thompson Ramo Wooldridge Inc.	4,752,907	3,951,690
Towmotor Corp.	1,149,067	707,830
Union Carbide Corp.	90,443,000	49,901,000
Vertol Aircraft Corp.	227,296	185,021
Wagner Electric Corp.	3,704,194	2,301,037
Warner & Swasey Co.	2,136,430	507,780
Westinghouse Air Brake Co.	4,683,350	4,912,410
Westinghouse Electric Corp.	34,150,000	29,973,000
Whirlpool Corp.	9,785,210	3,815,424
White Motor Co.	6,793,005	2,543,208
Woodward Iron Co.	2,359,852	1,739,902

Steelmakers Set a Record

(Net Profits)

SELECTED COMPANIES	1959	1958
Alan Wood Steel Co.	$2,096,000	$339,000
Allegheny Ludlum Steel Corp.	12,369,009	1,371,967
Armco Steel Corp.	50,593,068	20,956,744
Colorado Fuel & Iron Corp.	12,588,760	(a)326,708
Continental Steel Corp.	2,788,457	1,669,754
Copperweld Steel Co.	3,497,798	(a)207,138
Crucible Steel Co. of America	8,621,061	399,327
Detroit Steel Corp.	5,592,234	(a)301,839
Granite City Steel Co.	8,304,326	3,894,583
Inland Steel Co.	42,172,381	20,079,731
Jones & Laughlin Steel Corp.	42,206,000	5,691,000
Kaiser Steel Corp.	10,198,000	4,600,000
Latrobe Steel Co.	1,275,924	n.a.
Lukens Steel Co.	3,071,585	3,057,409
National Steel Corp.	39,461,108	10,329,188
Phoenix Steel Corp.	489,597	(a)1,060,431
Pittsburgh Steel Co.	4,041,518	(a)1,532,659
Republic Steel Corp.	67,089,717	23,904,602
Sharon Steel Corp.	3,070,905	(a)1,018,934
U. S. Steel Corp.	254,948,496	135,650,730
Washington Steel Corp.	(1)1,980,470	(1)382,568
Wheeling Steel Corp.	11,011,000	2,969,000
Youngstown Sheet & Tube Co.	28,704,805	7,812,741

(a) Net loss. n.a. Not available. (1) For nine months.

to model changeover, but look for a record fourth period.

• **For Appliances**—The industry is shooting for a record half—in sales and profits. Consumer buying is on the rebound, and most manufacturers have large enough steel stocks to ride out a lengthy strike.

• **For Construction**—Metalworking suppliers to the construction industry will have a record year. Construction volume in the U. S. will probably hit a record $73 billion.

• **For Rail Equipment**—Makers of railway equipment are headed for one of their best sales years. But the outlook is tempered by the steel strike. Material shortages will be felt within two weeks. And reduced carloadings may cause the carriers to curtail orders and spread out deliveries.

• **For Capital Goods**—The second half won't bring a record, but it will bring the highest earnings since '57's last six months. Much of the current strengthening in orders won't be reflected in profits until the last quarter and 1960.

Five Democratic senators turned out for the Small Business Committee's look at depreciation policies: (Left to right) George Smathers (Fla.), Alan Bible (Nev.), Clair Engle (Calif.), Wayne Morse (Oreg.), and William McInarney, counsel for the Government Procurement Subcommittee. Sen. Frank Moss (D., Utah) is not shown. Testifying (right, foreground) is Maurice Peloubet, New York accountant

New Hope for Depreciation Reform

INDUSTRY has gained ground in its long fight to get Congress to recognize the need for better depreciation policies. The occasion: Hearings on July 24 by the Government Procurement and Taxation Subcommittees of the Senate Small Business Committee.

The hearings were called by Senators George Smathers (D., Fla.) and Alan Bible (D., Nev.), chairmen of the two groups, because of "numerous comments" from small businessmen. They ended with a full endorsement of modernized depreciation policies for all industry by Sen. Wayne Morse (D., Oreg.).

Observers concluded the "day in court" did more for industry's case than any other recent Capitol Hill development. Witnesses were: Maurice Peloubet and Joel Barlow, depreciation experts well known to STEEL readers (Mar. 16, Page 66, and Mar. 30, Page 54); L. M. Evans and Frank Cruger for the National Small Business Men's Association; Robert Leeson, American Textile Machinery Association; and I. D. Shapiro, Institute of Scrap Iron & Steel Inc.

• Tieing industry's case to the special problems faced by small firms is certain to bring forth a healthy reaction among legislators. Another point is also expected to influence them. Several witnesses said that depreciation policies have a direct bearing on this country's defense posture.

At the least, the hearings will focus attention on Rep. Wilbur Mills's (D., Ark.) Ways & Means Committee in November, when it begins a thorough re-examination of Uncle Sam's tax policies.

An industry-wide approach to depreciation reform is needed, not just one for small business, Mr. Peloubet told the senators, adding: "Small business does not operate in one section of the economy and big business in another. The two are intermingled and interdependent." He estimates: "The annual difference between what is spent for plant and equipment and what should be spent is about $4 billion to $6 billion."

He also argues that better depreciation rates would benefit the U. S. Treasury: "About $26 of tax revenue is generated by each $100 spent by business for equipment and machinery. Conversely, at present corporate rates, the Treasury would lose up to $52 income tax on each additional $100 of nontaxable depreciation allowance. The loss could be made up by doubling the depreciation allowance, since an expenditure of $200 for new property would generate $52 of new tax revenue. Thus, if the entire $200 were spent for new equipment, there would be no tax loss."

• "Depreciation reform will cause

Prehearing strategy meeting: Joel Barlow, Covington & Burling, Washington, I. D. Shapiro, secretary-treasurer, United Iron & Metal Co., Baltimore; Senator Smathers. Mr. Barlow told the committee the U. S. is the "most backward nation" in its depreciation policies. Mr. Shapiro represented the Institute of Scrap Iron & Steel Inc.

little or no decrease in revenue in the first year, and it will definitely increase revenue in subsequent years," Mr. Peloubet stated.

He endorses the Keogh Bill as a "sound, middle ground approach." It calls for an additional depreciation allowance of up to $50,000 in one year (equal to the difference between the original cost and the current value) when the same amount is reinvested within two years. He says the "problem of shorter and more realistic lives will need to be dealt with separately."

• "Our depreciation policy is the most backward in the world," Joel Barlow told the committee. He noted that depreciation affects our national security "as much as any government policy."

A Johns Hopkins University survey, he said, states that 75 to 80 per cent of U. S. facilities for manufacturing are obsolete. "We cannot produce new weapons with the tools of World War II."

Commenting on current Congressional worries over imports competing with domestic products, he suggested revised depreciation policies would "fire up the ingenuity of U. S. companies to get rid of obsolescence."

• Business firms, especially some small ones, are shortsighted about depreciation. "They don't take all they can, so they can show a good balance sheet to their bankers," Mr. Barlow said.

Also, smaller companies may lack "the tax experts" to deal with agents of the Internal Revenue Service when figuring out depreciation. He noted there is plenty of "wrangling, haggling, and compromise" in dealing with the IRS. The "burden of proof" on industry (when arguing for shorter lives of tools) was also classed unfair. Mr. Barlow thinks there should be a minimum depreciation allowance, as well as a maximum, to force firms, large and small, to understand the importance of re-equipping. That, he implied, is a national obligation, if we are to stay in the race with Russia for technological supremacy.

He notes a "lack of uniformity" among IRS agents. Around Boston, agents tend to be "more restrictive" than those around Detroit. He said the depreciation pinch hits small companies first because they have more obsolete facilities. The tendency (though there are important exceptions) is to make small firms high cost producers. As a lawyer experienced in merger discussions, he suggests that our "tax depreciation policy works against our anti-trust laws" to the extent that small companies must combine or join larger ones because of the lack of modern equipment.

Mr. Barlow recommended Canada's bracket system plus minimum requirement for depreciation.

• Senator Morse endorsed Messrs. Barlow's and Peloubet's testimony completely. He said: "Too many legislators lack the time to come to grips with problems of abstract economics." He advised the witnesses: "To get a law enacted, you must first get the politicians to understand it."

He encouraged industry: "We must get rid of Bulletin F." (The Treasury Department's current study of it is being held up until Representative Mills's committee completes its work.) "It is outmoded. The fact is, in applying tax policies like this, we violate a fundamental principle of American justice—uniformity. We have a job to do. We must get across that the application of sound economics like this doesn't cheat the American taxpayer. Give us factual information to meet this charge when it is made on the floor of the Senate. It is so important to make clear that this is not a tax dodge, a scheme of industry to pass the tax burden to the shoulders of the nonbusiness community. I am sure it can be demonstrated that in the long run it will mean less taxes for the masses. It can function as an inflation check."

• Industry will have to develop its case for the use of liberal legislators like himself, says Senator Morse, because depreciation "has no sex appeal at all." He particularly mentioned the problem of convincing "American labor" of the national benefits of depreciation reform.

Mr. Shapiro, secretary-treasurer, United Iron & Metal Co., Baltimore, described the last ten years as opening more technological advances for the scrap industry than have been seen in 100, but depreciation practices are not allowing the average operator to keep up.

Meany Fights Labor Reform

THE MOST important figure in behind-the-scenes attempts to scuttle labor reform on Capitol Hill is George Meany, president, AFL-CIO. Aware of a new drive by southern Democrats and Republicans to line up a majority against a weak labor bill, Mr. Meany has his "legislative representatives" hard at work this week to hold prounion legislators in line with the AFL-CIO's position. He wants no labor bill at all.

Here's the situation:

Debate on the original House bill, which is described by reform advocates as being weaker than the Senate-passed Kennedy Bill, is scheduled to begin today.

Last week the conservative coalition introduced a tougher reform measure (the Griffin-Landrum Bill) on the floor of the House.

Sen. Barry Goldwater (R., Ariz.), the only senator who voted against the Kennedy Bill, has this to say about the original House bill: "It does nothing to correct this evil condition of unjustified labor union power, and most of the House committee amendments actually compound the condition."

Even the AFL-CIO opposes the original House bill, despite several provisions frankly designed to appeal to the unions. It exempts over 60 per cent of all union locals from reporting their financial affairs to the Labor Department, allows union officials to use union funds to defend themselves if charged with violating the act, and does nothing about organizational picketing or secondary boycotts which is of much significance.

Lengthy Floor Fight Is Certain

The administration is backing the tougher Griffin-Landrum measure, which contains a broader "bill of rights" among other things. Freedom for a member to speak at union meetings, assemble with other members, and protest arbitrary fees are guaranteed. A fine of up to $10,000 and a jail term of two years for union officials denying those rights to members are possible under the bill where violence is proved.

Mr. Meany is also against this bill. His position: It harms legitimate unions under the guise of going after the crooks. He admits that public pressure for some sort of labor reform is tremendous this year and that the politicians will be hard put to face their constituents if Congress adjourns with no bill, but he is still ready to go all the way down the road to defeat even the relatively weak Kennedy Bill.

So you have these disparate elements in the Capitol Hill arena:

1. Prounion legislators who want no bill at all.
2. Prounionists who think it a political necessity to have a "sweetheart" bill to appease the voters.
3. Conservatives who fear this may be the last chance for strengthening management's rights (assuming a Democratic Congress will be voted again in 1960).
4. Antiunion elements who are determined to break the backs of labor and will accept no compromise.
5. Middle of the roaders who will do their honest best to construct meaningful legislation with a chance for passage.

Upon the skill of the last category of legislator depends the public's hope for legislation to drive the racketeers out of labor forever.

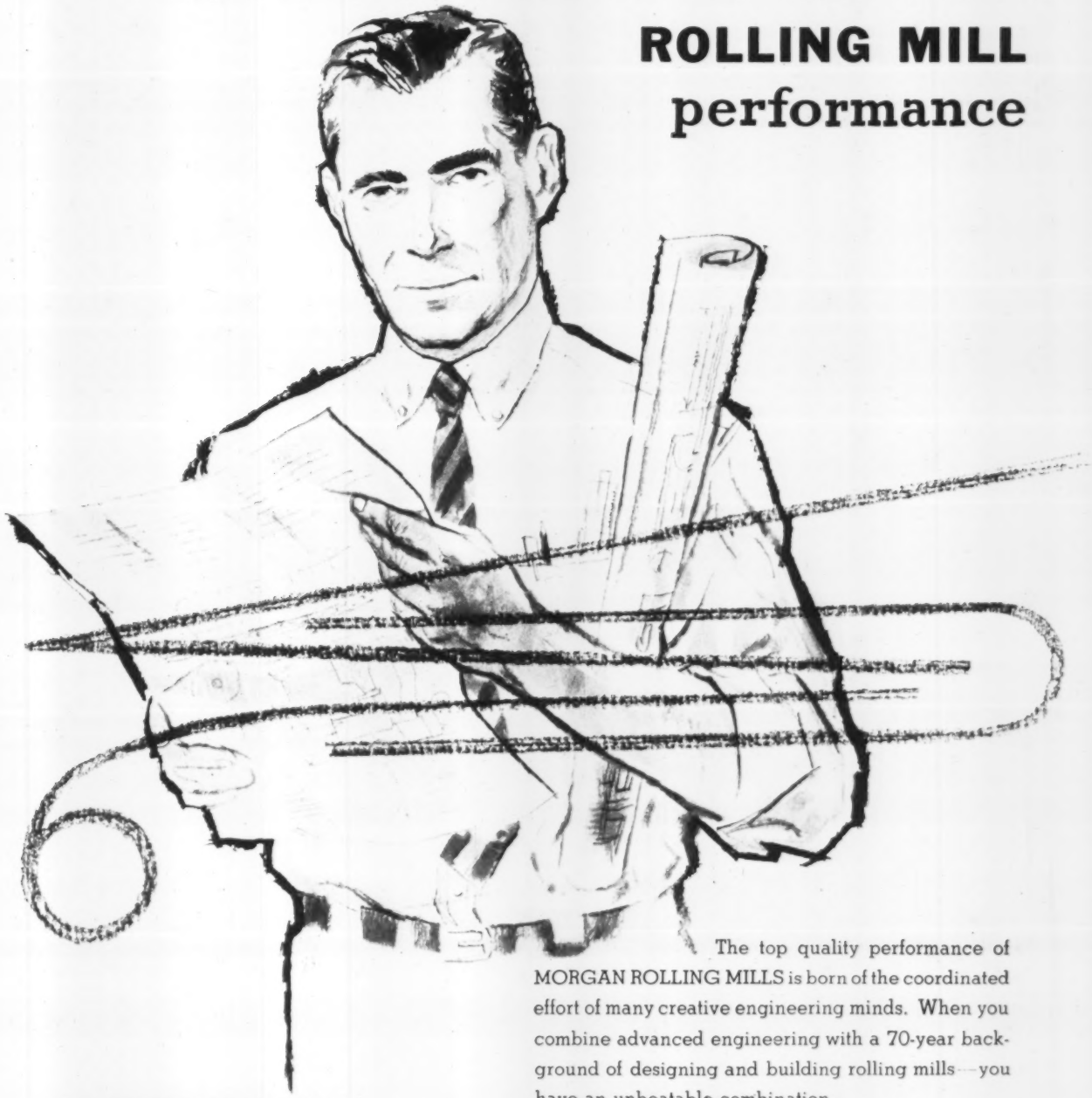
Estes Hits New Steel Warehouse Pricing

Sen. Estes Kefauver (D., Tenn.) is getting ready to charge some steel service centers with violating the Robinson-Patman Act. He claims the warehouse pricing system inaugurated in May (STEEL, May 18, p. 141) by some distributors has a "disastrous" effect on small firms. (In general, the structure lowers discounts on most quantity orders and raises them on many smaller orders.)

The senator says an "unknown but sizable" number of small steel consumers require several different types of steel products yet lack the financial resources to buy in quantity to their advantage under the new pricing system. His Antitrust & Monopoly Subcommittee has reportedly received complaints that the price of steel in some cases has gone up $50 per ton.

New Approach to the Atom Plane

Pentagon and Atomic Energy Commission are reported considering handing the atom plane program (a 13 year, $840 million project as of the end of fiscal 1959) to private industry. A weapon system approach similar to Space Technology Laboratories' work for the Air Force is likely, although some congressmen will complain the switch would slow down the program and needlessly add to costs. The move will come to a head upon the retirement of the program's boss, Maj. Gen. Donald Keirn, next month.

the men behind MORGAN ROLLING MILL performance

The top quality performance of MORGAN ROLLING MILLS is born of the coordinated effort of many creative engineering minds. When you combine advanced engineering with a 70-year background of designing and building rolling mills—you have an unbeatable combination.

Write for our booklet telling about our mills and where they are located.

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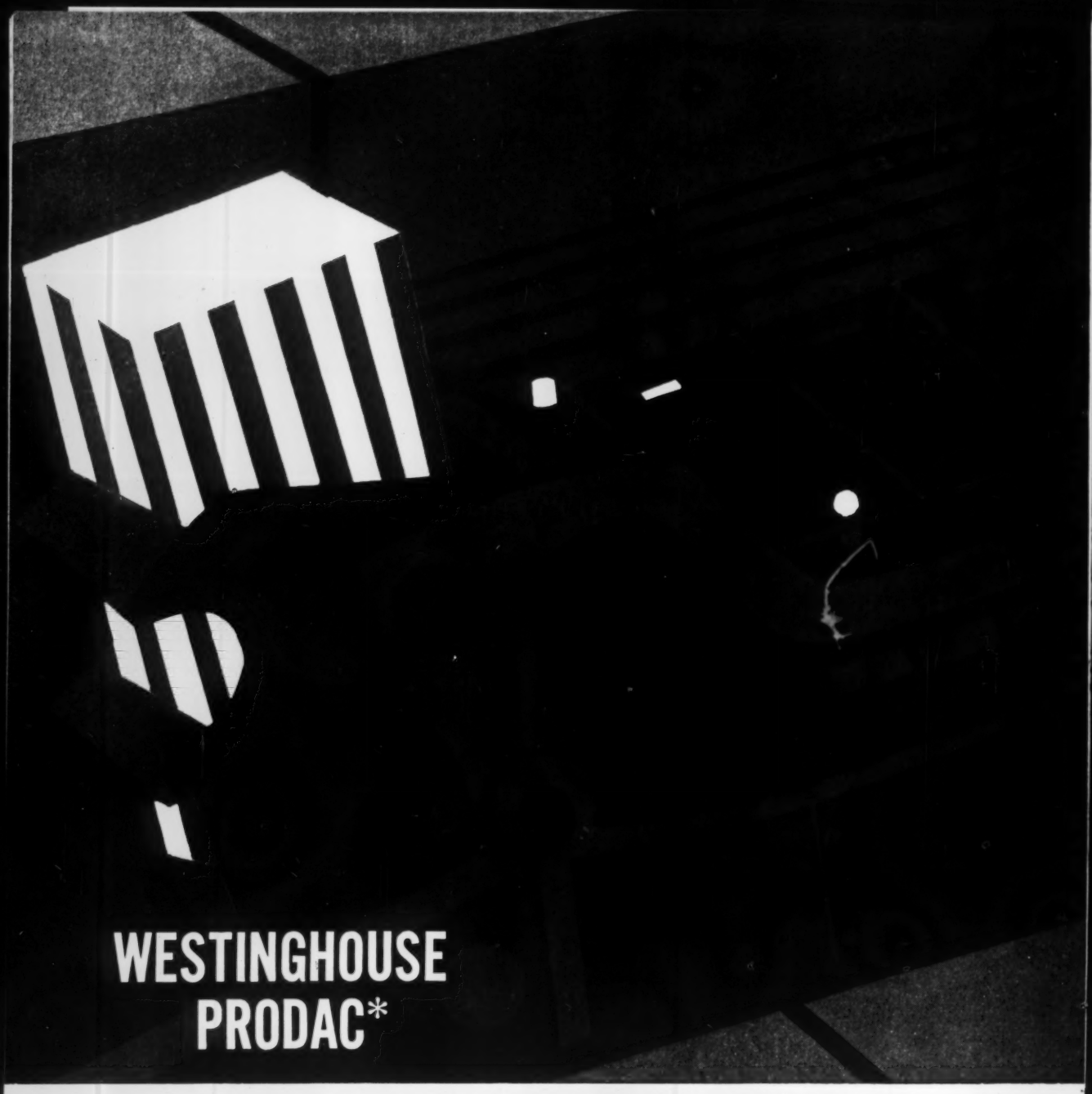


means automatic ingot buggy operation

. . . automatic cycling of ingot buggies and transfer cars . . . coordinated with sequencing of ingot buggy calls to the selected soaking pits . . . stopping accuracy of plus or minus one foot at the pits . . . no limit on number of stopping positions . . . remote control possible from any number of stations. This is but one of many ways Westinghouse PRODAC† is helping bring about the "mill of the future" today through completely automatic ingot buggy operations.

Westinghouse has service-proven PRODAC installations that economically automate slabbing mills, blooming mills, reversing roughers, stock house materials handling and many other mill applications.

By specifying Westinghouse PRODAC for your mill, you open the door to many new cost-saving benefits which are unobtainable with conventional controls. For example, PRODAC assures the most consistent standards of quality control at the highest rates of production speed . . . coordinates operation of all machines at the over-all maximum efficiency . . . holds maintenance to a minimum, and practically eliminates control failures . . . gives you a "building block" design which provides flexibility required for further mill automation.

The entire team of Westinghouse PRODAC engineers is at your service to help you determine exactly where and how PRODAC can benefit you. Your Westinghouse sales engineer can give you complete information, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-22113

*PROGRAMMED DIGITAL AUTOMATIC CONTROL
†Trade-Mark

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" . . . CBS TV MONDAYS

Skilled Help Shortage Near; Here's a Way to Avoid It

YOU CAN EXPECT a serious shortage of skilled labor in the early '60s. You'll have a tough time finding new talent—and keeping others from raiding your present skilled worker supply. You can avoid the shortage by setting up an effective training program now.

Warns economist Sumner H. Slichter: "The need for skilled workers and technical personnel will grow faster than the labor force. It means that industry should expand substantially its training plans."

• Your first step is to work up an accurate estimate of future manpower needs.

If you'll set up training procedures to produce a reservoir of competent personnel, you can fill the needs as they arise and avoid a shortage.

• Your first line supervisors are the key to an effective program.

Developing skilled workmen can be the most important task of your foremen. The skill and efficiency of workmen are dependent on their job training and their attitudes toward first line supervisors. You'll reap big dividends from developing foremen who are good teachers (they'll enlarge your skilled labor pool), effective labor relations counselors (they'll help to keep the men you've got), and knowledgeable on company policies (they'll keep your men happy and more productive).

Warns Associated Industries of Cleveland: "Supervisors are the backbone of management. If they're to be respected, their position in the organization must be respected." So don't bypass them.

• Apprenticeship training is a positive step.

At Thompson Products Div., Thompson Ramo Wooldridge Inc., Cleveland, apprentices follow a formal, four year curriculum. They work in production while attending evening classes in shop practice, tool design, English, physics, chemistry, metallurgy, and advanced mathematics. Theodore J. Haas, staff director of trades training, says that 70 per cent of the graduates move into responsible positions. Examples: Plant superintendents, tool design and planning supervisors, manufacturing engineers.

A successful program requires meticulous screening and selection of personnel and careful follow-up. You may want to keep a detailed file on each apprentice, showing his job experience, classroom performance, and rate of advancement. Progress reports by supervisors that point out such things as the man's attitude and ability to get along with people are an effective aid.

• And you must keep foremen informed.

"Whether management acknowledges it or not, labor relations policies and practices are established at the point of contact between supervisors and workers. A labor relations policy, written and issued by top management, has little meaning until interpreted and applied at the production level," asserts one training director.

To make sure that interpretations are correct and uniform, you must maintain good communications between foremen and upper management. Most AIC members have regular meetings for supervisors to discuss labor problems, contract provisions, company policies.

Many companies find it helpful to discuss the labor contract with supervisors prior to negotiations. Foremen can point out the good and bad clauses and agree on interpretations as well as suggest changes. It's one chance to let a foreman feel that he's helping to shape personnel policies.

Other topics of foremen's meetings: Explanation of incentives, standards, work simplification, the handling of grievances.

William J. Martin, a junior at Georgia Institute of Technology, is one science student gaining practical experience in the laboratories of Melpar Inc., Falls Church, Va.

Young Scientists Learn, Earn in Melpar Facilities

PUTTING TO WORK its idea that industry shares with colleges the responsibility for training our future scientists, Melpar Inc., Falls Church, Va., gives science students part time jobs.

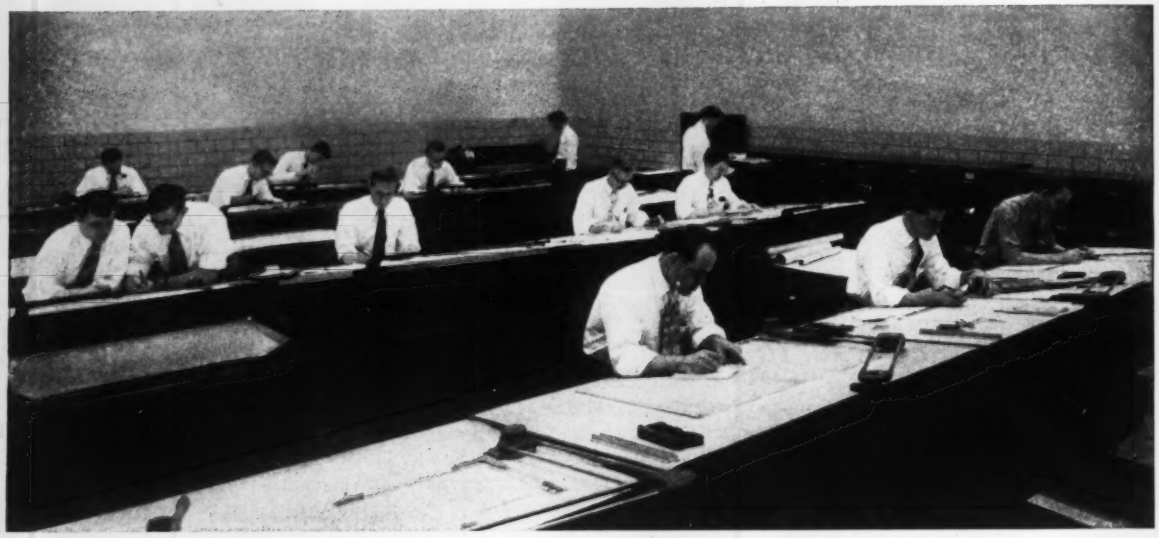
The firm, a subsidiary of Westinghouse Air Brake Co., does electronic equipment development work for the U. S. government. Almost 100 engineering and mathematics students are employed at its laboratory and production facilities this summer.

Most of the students are earning college expense money; about 20 work with the company as part of a co-operative training plan with colleges.

Melpar's management staunchly supports on-the-job educational programs to acquaint college students with concrete work problems, modern laboratory technology and equipment.

Some students return to the firm after graduation.

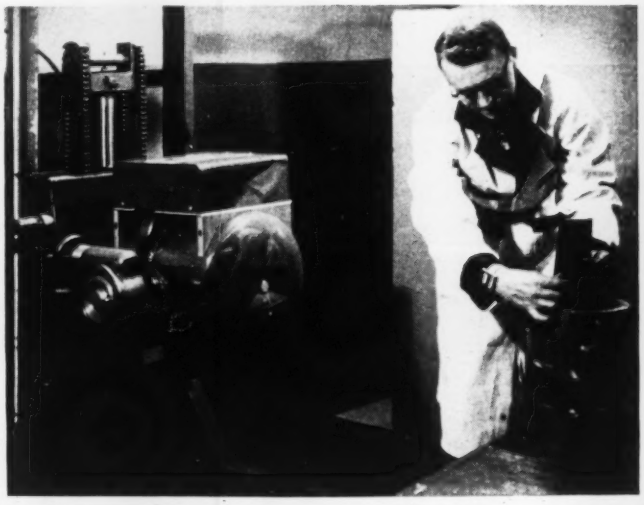
. . . how four of the engineering help you . . . the



1 The advanced product and process engineers at each of our plants are available to assist you with the casting design considerations. It is Central Foundry's practice to suggest design changes that ordinarily do not affect the part functionally, but often reduce casting weight, thus reducing casting costs. Your blueprints are returned to you with parting line, coring and gate locations as well as suggested changes in casting design clearly marked.

Our engineering staff is specialized to give you expert assistance in each of the metals Central Foundry produces. When you are considering castings of ArmaSteel, malleable iron or grey iron to be cast in either green sand molds or by the more exacting shell mold process, contact the sales department of Central Foundry Division.

2 Cobalt 60 radiography, a fast, positive method of detecting sub-surface defects, has replaced time consuming breaking, cutting and etching of castings, formerly used by the foundry industry to check new parts for soundness. This technique does not demand destruction of the part and gives positive location of any defects. With radiographs as a guide, our engineers can make necessary changes in gating, feeding and general design that assure quality castings at reduced cost, and do it in hours compared to days required for breaking or cutting.

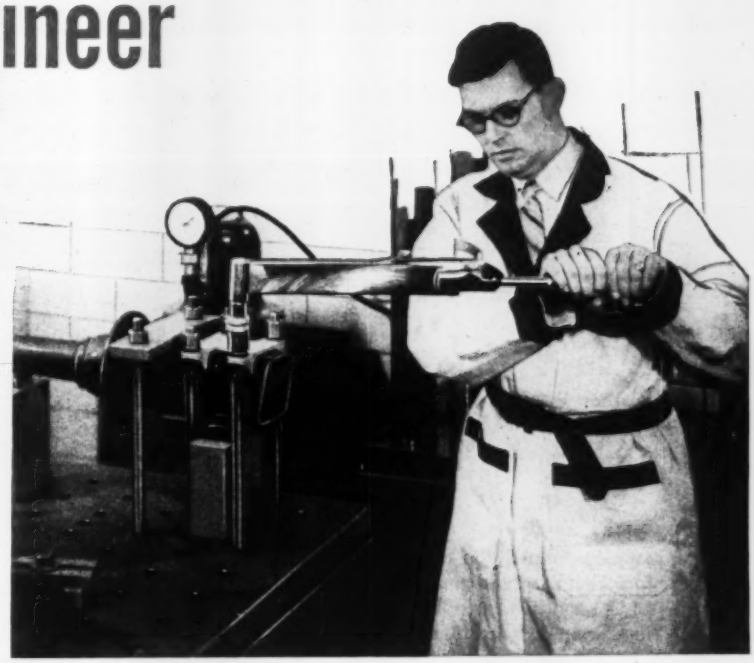


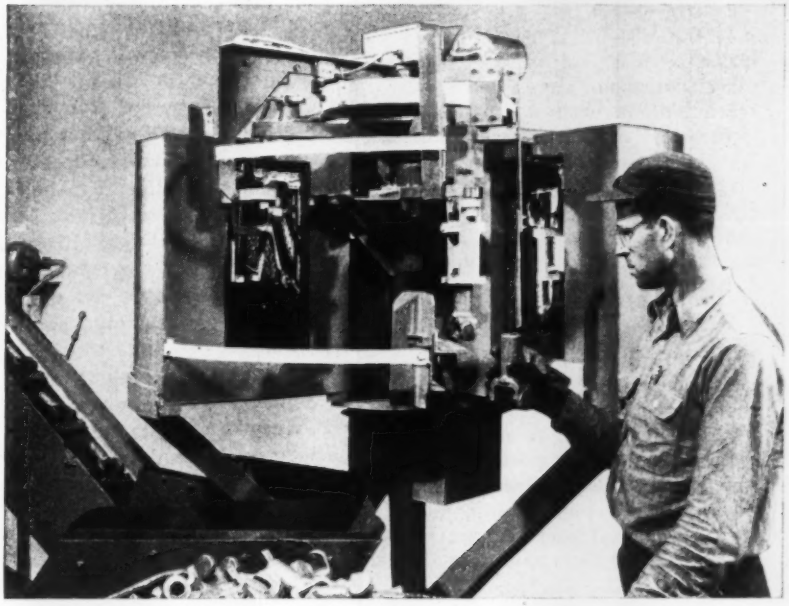
CENTRAL FOUNDRY DIVISION
GENERAL MOTORS CORPORATION

CENTRAL FOUNDRY DIVISION

services at Central Foundry design engineer

3 Stress Analysis is also used at Central Foundry in the design or redesign of castings to reduce weight and improve mechanical strength. By an accurate study of stress, both statically and dynamically, Central Foundry engineers are able to suggest design changes, to put metal where it is needed, remove excess material, to recommend the best material for your part and thus assure the highest quality castings at the lowest possible cost.





4 Sonic testing is an electronic listening device developed by Central Foundry that automatically distinguishes between the vibrations of good and faulty castings and sorts them accordingly. The sonic testing machine, much faster and more accurate than visual inspection, eliminates human error and is ideally suited to high production of castings designed for critical applications.

Central Foundry, with plants in Saginaw, Michigan, Defiance, Ohio, and Danville, Illinois, has the vast facilities and engineering services necessary to deliver, on schedule, quality castings in production quantities. Our sales engineers, product development engineers, foundry engineers and modern engineering services are all available to help you get quality castings . . . at low cost . . . in less time.

MEMBER MALLEABLE CASTINGS COUNCIL

GENERAL MOTORS CORPORATION • SAGINAW, MICHIGAN • DEPT. 20

Material Handling Equipment: Orders to Climb 28 Per Cent

THE CAPITAL SPENDING **BOOM** BEGINS

More than $1 billion worth of orders will be placed during the second half of '59. It means that 1959 sales should equal those of '57. Price fighting plagues the industry. Foreign competition is getting worse. This is the fourth article in STEEL's report on the outlook for capital equipment.

Here's Second Half Outlook for . . . Conveyors

The second half of '59 shapes up as the second best six months in history for conveyor manufacturers: Orders may exceed $190 million. Look for the industry to resume its normal growth pattern: A 15 per cent sales gain annually. New orders will probably rise 20 per cent in '59 vs. '58.

A STEEL survey of conveyor manufacturers found all but one expecting second half orders to exceed those of the first half. Several large producers look for increases of better than 15 per cent; one says 33 per cent.

Best markets will be the automotive, steel, machinery, appliance, and foundry industries.

You'll wait three to eight weeks for delivery, on the average, if you place an order now. For specially engineered systems, you may wait 10 to 16 weeks. Backlogs are about 30 per cent higher than they were on Jan. 1.

BETTER THAN TWO BILLION. That's the prospect in dollar value of orders for the material handling equipment industry this year. First half bookings were about 40 per cent higher than those during 1958's first half. Second half orders from the metalworking industries will exceed those of the first half by 28 per cent.

Those are the findings of a STEEL survey of the companies which represent nearly one-third of metalworking's total outlays for capital equipment. The firms told STEEL their confidential buying plans for the second half.

• **The Big Buyers**—Producers of general industrial machinery (such as pumps, compressors, and industrial furnaces) will bend their order curve up most sharply; they'll spend 73 per cent more for material handling equipment in the second half than they did in the first. Here's how the second half spending of other industries will compare with that of the first six months:

Foundry	44% more
Automotive	42% more
Steel	31% more
Electrical machinery & equipment	9% more
Aircraft	1% more
Special industry machinery	15% less
Metalworking machinery	16% less

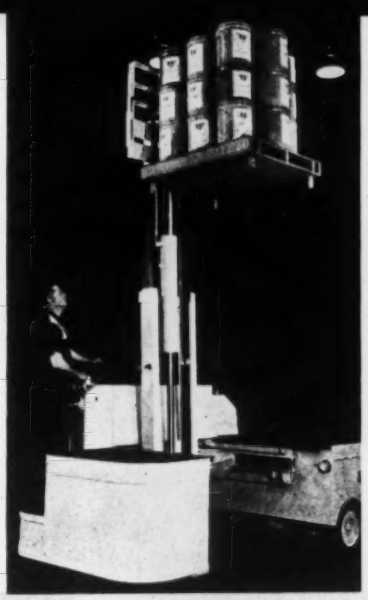
• **The Big Orders**—It means orders for conveyors will exceed $360 million this year (vs. about $310 million last year). Orders for industrial trucks may climb above the $300 million mark.

• **A Big '60**—STEEL also surveyed major producers of material handling equipment. They confirm the upward trend (see summaries at right). And they're extremely bullish about prospects for 1960. The average conveyor maker expects his 1960 sales to be 36 per cent better than 1959's. The average cranemaker predicts a 27 per cent gain. Most industrial truck producers foresee a 10 per cent increase.

• **Price Fighting**—Bidding is highly competitive in all segments of the material handling equipment industry. Nineteen in twenty manufacturers admit that price competition has become a serious problem. Two in three expect some improvement in the next few months, but few expect the issue to vanish.

Price shoppers can get fantastic "bargains." On large orders—$50,000 or more—sales at 25 per cent below list prices are not uncommon. A crane producer says reductions of 5 to 15 per cent are common on orders ranging from $10,000 to $50,000. On larger orders, "anything goes," he reports.

A conveyor manufacturer reports a competitor installed an in-floor system at a freight terminal for "30 per cent less than the normal quotation." Another firm says it was underbid by 30 per cent on a conveyor installation in a steel mill. "The conveyor industry is plagued



Cranes & Hoists

Sales of cranes and hoists this year will exceed those of last year by 41 per cent. That's what STEEL learned in a survey of manufacturers. They expect second half sales to be about 20 per cent better than those of the first six months.

It means that 1959 will be as good as 1957 for the crane and hoist people.

Best market will be the steel industry. The foundry and construction industries will also boost their orders substantially above the 1958 rate.

Current backlogs are nearly 50 per cent above the level on Jan. 1. You'll wait three months to a year for delivery of specially engineered cranes. Standard varieties can be shipped 1 to 12 weeks after an order is placed. You can get delivery on most standard hoists within a month after ordering.

Industrial Trucks

Sales of industrial trucks in 1959 should be about 25 per cent higher than those of 1958. Second half orders will exceed those of the first half by at least 15 per cent. That's the indication of two STEEL surveys—one of equipment buyers and one of industrial truck producers.

It means that the industry's volume will bounce back to the 1957 level and maybe even exceed it.

Best second half markets will be the automotive, aircraft, foundry, and machinery industries. The steel, oil, and paper industries will also step up their buying.

Backlogs are up considerably from the January level. You'll get delivery 1 to 12 weeks after you place an order.

Several firms report that new models designed for narrow aisle usage are in great demand. The development is a big contributor to the rosy sales outlook.

Other Handling Equipment

Magnets and Lifters—Second half orders will exceed those of the first. For the year, sales could be as much as 40 per cent above the 1958 level. The situation reflects the buying rush by scrap dealers in their efforts to offset labor costs through improved handling methods. The steel, foundry, and metal fabricating industries are boosting orders too.

Monorails—Second half dollar volume of orders will be 10 to 12 per cent above that of the first half. The industry will edge toward its 1957 sales level. Best markets will be the machinery, automotive, other transportation, aircraft, and rubber industries. Most deliveries are now made three weeks to three months after order placement, though four months may be necessary for some engineered installations.

Industrial Elevators—A steady order rate is in prospect.

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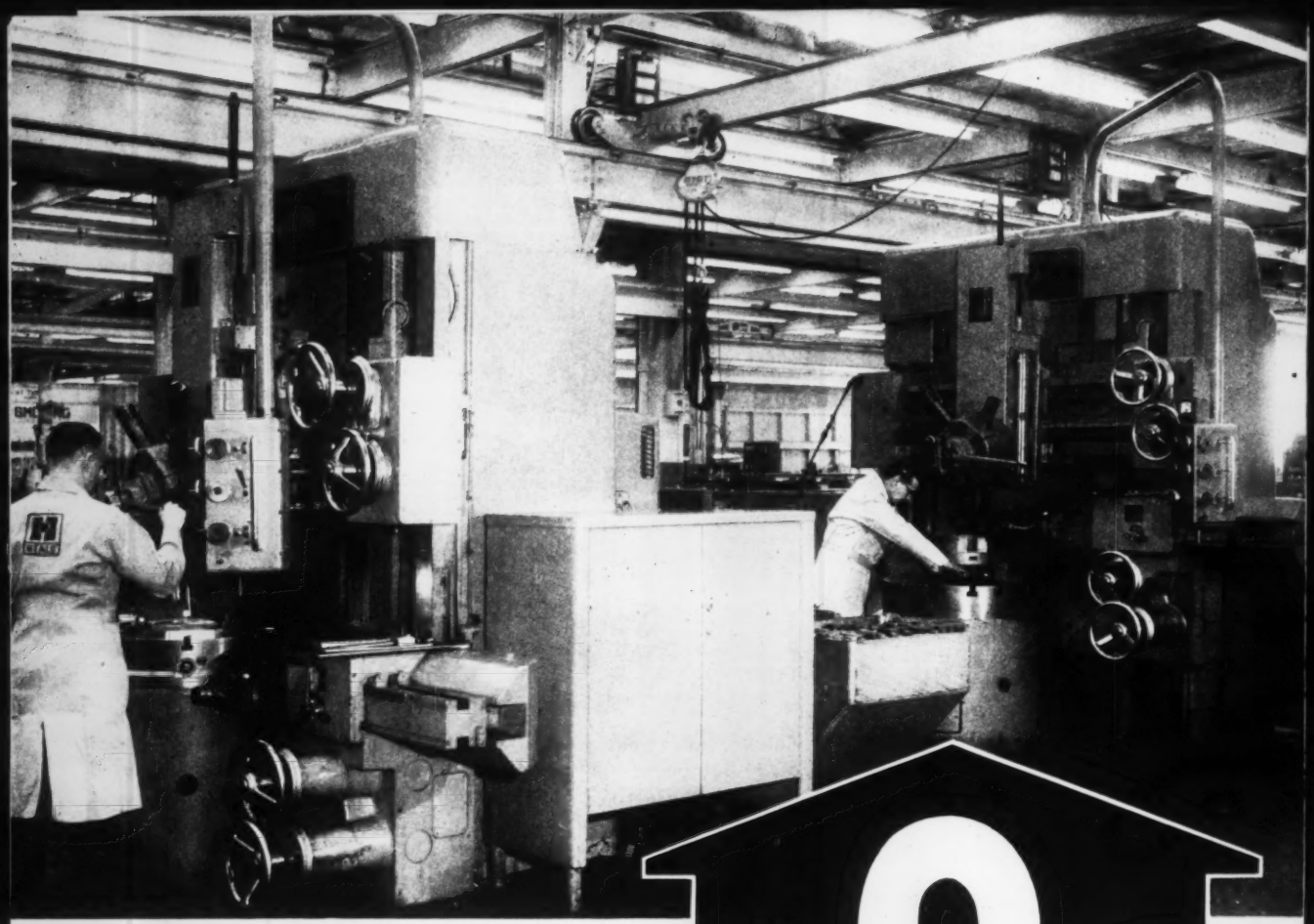
with high preliminary engineering costs, and many desperation bids are made to recover those outlays," explains one producer.

A U. S. government agency is buying a sizable quantity of chain hoists and monorail track for 15 per cent below the regular price.

Expect some price firming by yearend. Most producers say they'll hike their quotations 3 to 10 per cent. About half the makers expect to push through another round of increases next year.

• **Threat from Abroad**—Foreign competition in the domestic market is mild, but three in five manufacturers say it's threatening to become a problem.

They say it's already severe in export markets.



IT PAYS TO REPLACE . . .

A study of the production factors at The Heald Machine Company, Worcester, Mass., pioneer New England builders of precision machine tools, indicated that two Bullard Cut Master V.T.L.'s, Model 75, would produce as many parts, in any given period, as four Bullard V.T.L.'s of an earlier design.

when 2 do the work of four

In actual production, these additional advantages have been experienced:

- Greater flexibility for faster changeover and set up
- Ease of control — less operator fatigue
- Dependability and accuracy on holding size
- Less tool wear, spoilage and inspection
- More rigidity for higher speeds and feeds

This all adds up to more parts at less cost per piece.

Perhaps an analysis, by a Bullard Sales Engineer, of your machining procedures will reveal "hidden savings" for you.

Why not ask him or write.

BULLARD

THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT

Supplier Adopts 'Reliability' Standard

AC's Lloyd Steward says it's a step beyond quality control because . . .

- **It anticipates product failure.**
- **It reduces warranty costs.**
- **It satisfies customers.**

RELIABILITY is old hat in the missile and aircraft business, but automakers are just beginning to expand their quality control sections to cover total reliability from basic design to the functioning of parts.

General Motors' AC Spark Plug Div. is one of the first to embrace the systems reliability concept. It's doing so in its Flint, Mich., automotive plants. AC's aim is to build greater customer satisfaction, reduce warranty costs, and improve product quality in today's more complicated vehicle parts.

AC's reliability control group has equal status with manufacturing, purchasing, engineering, and sales on the division's organizational chart. Lloyd Steward is reliability director. His group is split into two sections: Quality control is headed up by Seymour Ivey, the reliability technical section by Fred Turcotte.

• **Old Way**—Under the usual setups, each automotive supplier or plant must make sure products meet specified standards before they leave the plant. Quality control checks everything from the time the raw materials arrive until the finished product is shipped. But its job usually stops there. Under the quality control theory, the whole should equal the sum of the parts. If each component in a system meets the proper specifications, the whole unit should work right. Unfortunately, this type of logic is not always valid. Take the case of the collapsing gas tanks.

• **Misses Trouble**—One of GM's car divisions was having trouble with its gas gages which indicated a full tank was a quarter empty. Customers complained. The car division blamed AC for turning out faulty gas gages. AC was in a spot where it had to prove its innocence or pay the replacement bills.

Detective work uncovered the culprit. The gas tank had a small vent pipe that became frozen shut in winter. The fuel pump kept on pumping. This created a vacuum which partially collapsed the tank. The gas gage sensing float in the tank couldn't operate correctly in the collapsed space. Result: The gages read wrong even though they were perfectly made and met all quality standards. What hadn't been realized was: 1. That the vent pipe could become clogged and cause the tank to collapse. 2. This would affect the functioning of the gage itself.

Theoretically, this problem could have been spotted by car division inspectors during prototype testing, but, in practice, the final assembly plants have so many quality checks just putting the cars together that they usually accept individual systems as being O.K.

Says Mr. Steward, "Finding and correcting these mistakes takes time and costs money. If we had been using a systems approach, we would have tested this installation thoroughly and probably would have spotted this problem before model production began."

• **Reliability Goes Farther** — In make reliability work, AC tries to anticipate what will make a product fail so it can correct problems before production begins. That means

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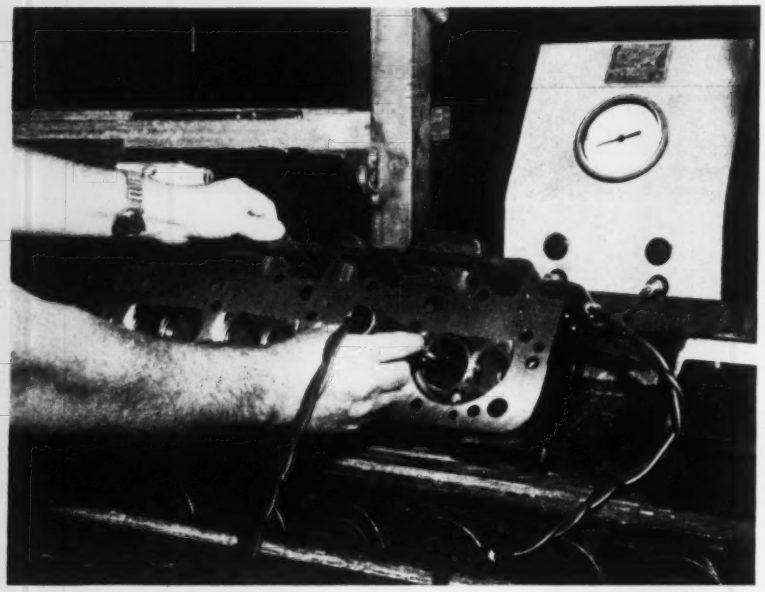


THIS FREELAND AIR PLUG GAGE checks hole ID and surface finish of valve guide bushings in engine heads at GM's Cadillac Div. It has cut costs an estimated 15 per cent by eliminating the need for time consuming profilometer checks in the inspection lab. The gage is used on the line so all bushings can be inspected if necessary. Its spindle has a contact blade to check ID and two open jets to check average surface finish in one operation

testing not only parts, but the whole system each part fits into. It calls for close co-operation among departments and with other divisions.

As before, quality control checks in-plant operations to make sure specifications are being met. The reliability technical section is concerned with product control. It tests parts, systems, and raw materials for itself and its venders. The group has its own chemical laboratory to help in making tests. Many tests are accelerated so systems can be checked to see how they'll work over longer time periods.

In addition, Mr. Steward's group periodically checks how the car divisions are installing AC parts, so they can suggest changes or improvements if improper assembly methods are observed. "We're spending a lot of time figuring out how to manufacture, package, and ship delicate instruments so they won't be damaged, then we find an operator on the customer's assembly line who tosses speedometer clusters into the car. If they don't fit immediately, he's just as apt as not to tap them into place with a mallet. The product is damaged and so is our reputation when the part fails," groans Mr. Steward.

• **Data Aid AC Planning**—Gathering information is important in making reliability work, says Mr. Steward. AC taps field listening posts, factory contact reports, monthly product test results, life testing, United Motors Service summaries, warranty and customer reports, as well as its own divisional analysis.

In time, much of this information will be compiled into a reliability history for the guidance of engineers in all GM divisions. Mr. Steward believes such information will be most useful. "We feel the reliability objective must be stated by the design engineer. He must clearly define the considerations for environmental and operational conditions."

Exhaust Notes

• Chrysler's Valiant will have an alternating current electrical system, say STEEL sources. Elimination of direct current systems has been predicted for several years. Current alternators have been available on trucks and some heavy duty vehicles. Chrysler apparently will be the first firm to introduce the system on passenger cars.

• General Motors has proposed a $20 million expansion program to the Argentine government. It will provide for the manufacture of light and medium trucks in that country. The expansion includes enlarging the two plants GM now operates near Buenos Aires as well as construction of a new engine plant. The proposal would provide an annual volume of 20,000 vehicles for GM's Argentine facilities.

• Studebaker-Packard Corp. reports working capital is $57.7 million, including $54 million in cash and marketable securities.

• Chrysler Corp. says its first half defense business amounted to $165 million vs. $126 million for the like 1958 period. Chrysler spent $28.8 million on capital expenditures in the first six months vs. $29 million last year.

• Ford Motor Co. claims gross hourly earnings for its workers of $2.84 for the first half of the year set a record. Last year, the figure was $2.61. Average total employment during the 1959 period was 159,131 compared with 141,276 for 1958's first half.

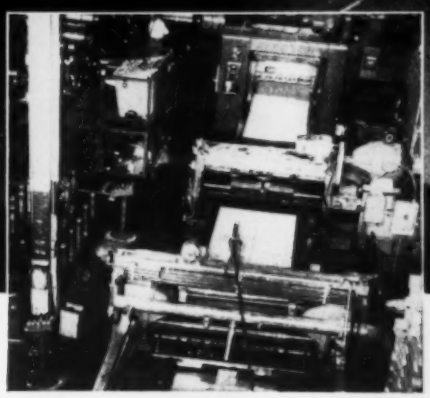
U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,132
March	576,085	357,048
April	578,825	316,594
May	546,817	349,613
June	558,026	337,446
6 Mo. Totals	3,283,994	2,242,348
July		321,017
August		180,447
September		130,460
October		261,701
November		514,152
December		593,920
Total		4,244,045

Week Ended	1959	1958
June 27	127,217	92,277
July 4	108,397	35,273
July 11	123,147	73,062
July 18	127,502	85,533
July 25	124,921†	85,519
Aug. 1	120,000*	62,846

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.



Edward N. Sienko, Manager of Special Products, tells how:

"Custom service and Wean coil processing are helping Sun Steel beat cost squeeze"

That's a sheet of partially embossed stainless Mr. Sienko is holding—and it's part of the story on how Chicago's Sun Steel Company is countering the cost squeeze on steel warehousing operations.

As Mr. Sienko states it, "Today our margin on materials is half what it was 15 years ago but our man-hour costs are more than double." Sun's answer: add specialty products to better serve customers—such as vinyl-coated steel, embossed stainless and aluminum sheet—and cut costs by installing a Wean coil processing line.

The Wean "Flying Press" line enables Sun to stock standard coils—with savings in cost, handling and inventory—yet meet customer requirements for prime sheet quickly and efficiently. As Mr. Sienko puts it, "To provide this custom service, we need modern equipment like the Wean 'Flying Press' line: we'd be lost without it."

If your firm uses sheet stock in quantity, you should explore the possible economies of coil processing. Write or call for an appointment with an experienced Wean sales engineer: it may be the most important step you'll take this year in the battle against costs.

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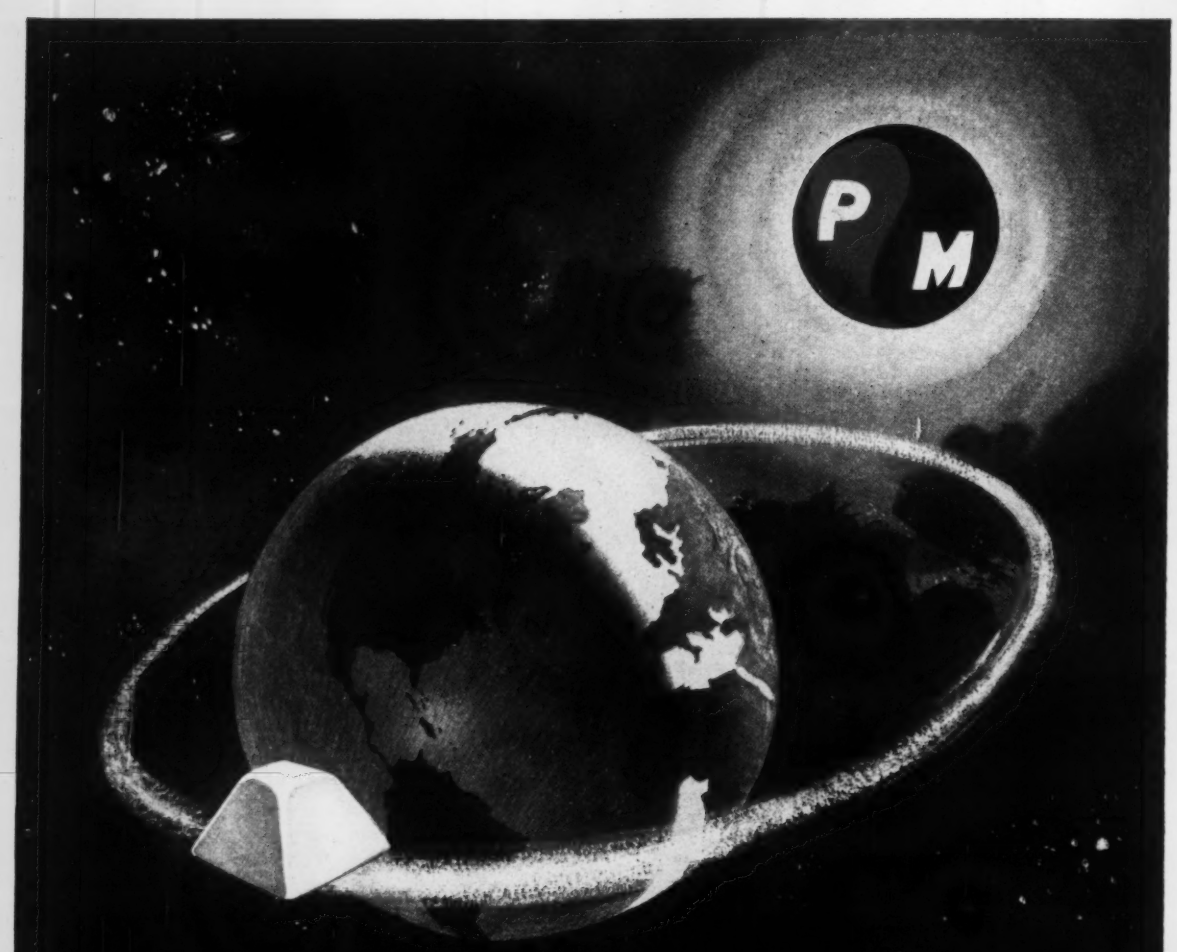

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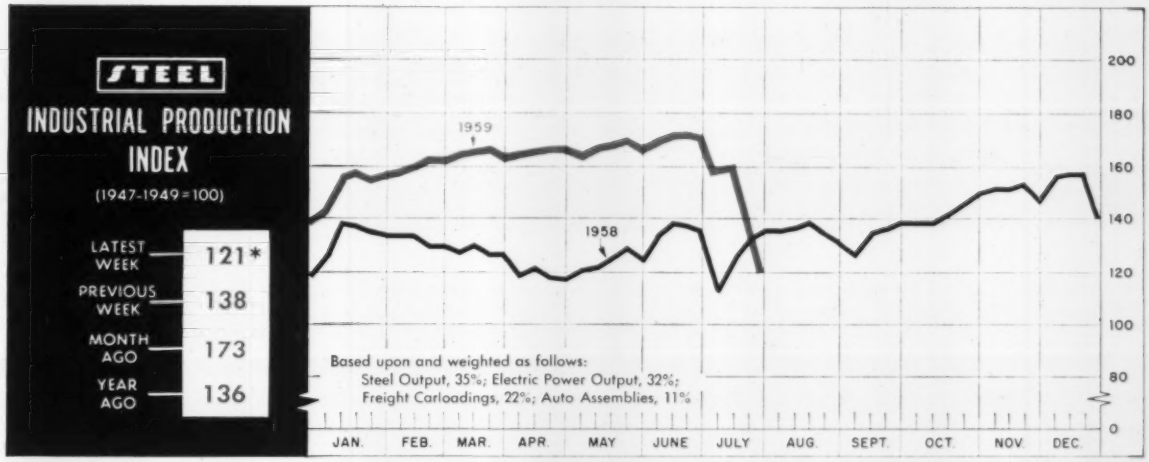

*Week ended July 25.

Get Set for Records in 4th Quarter

THE STEEL STRIKE is setting the stage for the best fourth quarter in the nation's history.

While the strike has depressed some business indicators to their lowest levels since the bottom of the recession—and promises to take them down even farther—there is no question about what a settlement will mean. The economy will climb well above any previous peak.

• **Bottom Drops Out**—During the week ended July 25 (the first period when the full effects of the walkout were felt), STEEL's index (above) plunged another 17 points to a preliminary 121 (1947-49=100). The strike has been responsible for a drop of 53 points since the record of 174 was set in mid-June.

Not only has steel production about dried up (current output accounts for only 12.5 per cent of the industry's capacity), but freight carloadings also have been cut drastically, and the normal seasonal expansion in electric power output has been held in check.

• **Ceiling to Be Raised**—But the longer the strike goes on, the quicker the recovery will be once a settlement is reached. As it stands right now, enough steel output has been lost (nearly 5.7 million ingot tons) to guarantee a return to the high level of second quarter operations, even if there were a settlement today. The contribution to STEEL's composite index will be about 60 points.

• **Carloadings Will Climb**—With the end of the strike, freight carloadings will climb to the highest levels since 1957 unless a car shortage of serious proportions develops. Four factors will account for this:

1. Steelmakers will require record stockpiles of ore to go through the winter.
2. Coke shipments will be stepped up in relation to steel output.
3. Coal shipments will also advance as consumption for coking

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	354[1]	365	1,561
Electric Power Distributed (million kw-hr)	13,450[1]	13,415	12,319
Bituminous Coal Output (1,000 tons)	7,130[1]	1,440	7,535
Crude Oil Production (daily avg—1,000 bbl)	6,825[1]	6,858	6,535
Construction Volume (*ENR*—millions)	$651.7	$446.6	$455.4
Auto, Truck Output, U. S., Canada (*Ward's*)	158,810[1]	164,190	107,941
TRADE			
Freight Carloadings (1,000 Cars)	575[1]	585	608
Business Failures (Dun & Bradstreet)	242	237	279
Currency in Circulation (millions)[3]	$32,043	$32,201	$31,217
Dept. Store Sales (changes from year ago)[3]	+7%	+9%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$26,351	$23,964	$23,280
Federal Gross Debt (billions)	$289.3	$287.1	$275.8
Bond Volume, NYSE (millions)	$26.0	$25.1	$24.9
Stocks Sales, NYSE (thousands of shares)	14,785	15,558	18,581
Loans and Investments (billions)[4]	$106.7	$105.5	$94.2
U. S. Govt. Obligations Held (billions)[4]	$31.5	$31.0	$32.2
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	216.7	216.8	198.7
All Commodities[7]	119.2	119.4	119.3
Commodities Other than Farm & Foods[7]	128.1	128.2	125.7

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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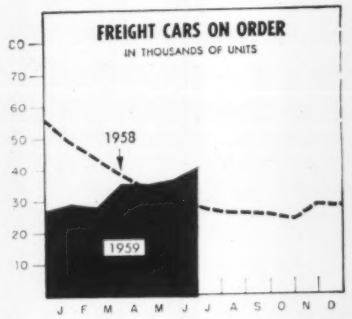
THE BUSINESS TREND

	New Orders 1959	New Orders 1958	Shipments 1959	Shipments 1958
Jan.	41,050	26,850	31,300	57,800
Feb.	45,400	28,300	36,050	48,050
Mar.	51,550	36,150	45,750	54,150
Apr.	53,200	28,300	45,000	50,900
May	48,700	28,050	41,000	50,100
June	67,300*	32,100	52,750*	45,500
July	.....	26,550	.....	29,700
Aug.	.....	28,300	.....	29,800
Sept.	.....	28,100	.....	34,900
Oct.	.....	37,000	.....	41,400
Nov.	.....	30,700	.....	33,650
Dec.	.....	43,900	.....	43,950
Totals	.....	374,300	.....	519,900

†Metal cutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.
Charts copyright, 1959, STEEL.



	Awards 1959	Awards 1958	Backlogs (end of month) 1959	Backlogs (end of month) 1958
Jan.	4,007	401	29,470	48,787
Feb.	1,806	287	28,789	43,750
Mar.	10,795	193	35,487	38,027
Apr.	3,736	278	35,479	32,908
May	5,253	1,372	36,869	30,386
June	8,054	317	40,973	27,757
July	.....	376	.....	25,994
Aug.	.....	1,773	.....	25,611
Sept.	.....	1,580	.....	24,982
Oct.	.....	781	.....	23,670
Nov.	.....	6,295	.....	27,962
Dec.	.....	3,830	.....	27,596
Total	.....	17,481		

American Railway Car Institute.

rises and ore boats rush supplies to the upper lake ports for the winter.

4. Miscellaneous shipments will gain because of renewed movement of steel mill products and other durable goods.

Contribution to STEEL's index: At least 21 points.

• **So Will Power**—Generation of electric power, always strong in the fourth quarter, will rise to record levels. If industrial activity is as high as anticipated, the fourth quarter gains will be greater than ever before. This will mean about 83 points to the index.

• **Don't Forget New Cars**—During late third quarter and early fourth, auto production will be rising steadily as new models come off the assembly lines. By late October, unit production should be at least as great as in the model buildup of 1958. Add 18 points to the index.

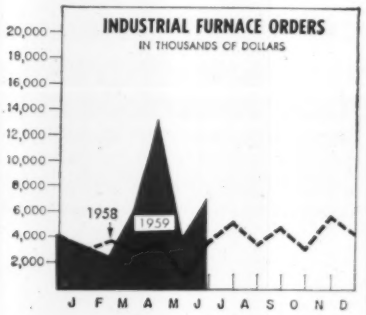
• **Presto, a Record**—That brings the total to a hefty 182 per cent of the 1947-49 average, which would be 4.6 per cent above the best level of the second quarter. When will that lofty peak be reached? About the middle of November, with a repeat just before Christmas.

FRB and GNP Will Zoom

You'll see the same kind of rebound in some of the broader business indicators. The dip in the Federal Reserve Board's industrial production index may be hardly noticeable if the strike is over by mid-August. Resting at a seasonally adjusted 155 (1947-49 = 100) in June, it will dip maybe 2 points in July. The steel strike, which was in force only half that month, accounts for close to 5 per cent of the index. Another half month of strike in August, followed by a vigorous recovery, might not knock off any more than a point. But if the strike goes six weeks, the FRB index might slip to 150 during August. Then look out!

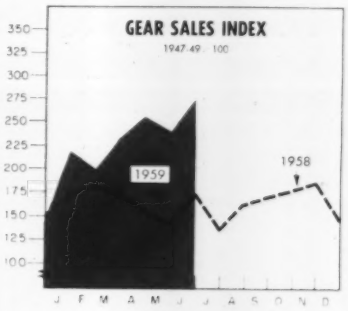
In the first month of recovery, production will at least match its best previous effort in June. Then in October, November, and December, the seasonally adjusted index will climb to an all-time high of about 160, far above the most optimistic estimates six months ago.

Gross National Product, at a record annual rate of $483.5 billion in the second quarter, could inch up a billion or two in the third period despite the strike. (Without the stoppage, it would probably expand



	1959	1958	1957
Jan.	3,518	3,047	8,775
Feb.	2,741	3,684	9,769
Mar.	6,146	2,871	10,485
Apr.	13,328	3,572	4,559
May	4,174	954	5,389
June	7,029	3,672	4,369
July	....	5,169	4,332
Aug.	....	3,533	3,924
Sept.	....	4,846	7,463
Oct.	....	3,105	3,674
Nov.	....	5,597	2,832
Dec.	....	4,284	3,992

Industrial Heating Equipment Assn. Inc.



	1959	1958	1957	1956
Jan.	218.6	174.5	259.3	245.5
Feb.	199.9	179.1	239.5	256.2
Mar.	234.3	173.7	262.4	276.5
Apr.	255.6	153.2	221.7	264.7
May	241.0	142.2	263.2	275.6
June	274.2	173.8	215.9	245.4
July	....	133.3	211.4	286.7
Aug.	....	162.1	225.8	219.5
Sept.	....	170.7	174.9	230.5
Oct.	....	175.9	207.0	299.8
Nov.	....	182.7	165.3	216.2
Dec.	....	145.5	150.8	235.7
Avg	....	163.9	216.4	254.4

American Gear Mfrs. Assn.

about $5 billion.) An exceedingly long strike would probably cut GNP back a bit. But during the fourth quarter, the annual rate will zoom to close to $498 billion as metalworking and allied industries push to regain losses during July and August. (Don't be surprised if GNP breaks the half billion dollar barrier.) President Eisenhower's Council of Economic Advisers is predicting an annual GNP in excess of $480 billion compared with $441.7 billion last year.

Hard Goods Show Way

Outside the areas affected directly by the steel strike, industrial production probably will not decline any more than seasonally this summer. Most metal consuming industries are well stocked with steel, and nonferrous metals, which could be tied up by strikes of their own.

Leading the advance by durable goods manufacturers is the machine tool industry. New orders for both cutting and forming types of tools in June came to $67.3 million, an increase of 38 per cent over the May total (see graph, page 60) and the highest level since March, 1957. Shipments jumped almost 29 per cent to $52,750,000, which resulted in a rise in backlogs to 4.1 months of production at current levels. During the first six months of 1959, the industry has taken in orders worth $307.2 million compared with $374.3 million for all of 1958.

One of the biggest year-to-year gains of any statistical series was turned in by freight carbuilders in June. They took orders for 8054 cars compared with only 317 in June, 1958, a gain of over 2400 per cent. While shipments gained also (3950 units), they failed to match the pace of orders, fattening backlogs to 40,937 units. (See table and graph, Page 60.)

Another big gain was chalked up by the makers of industrial furnaces. In June, orders came to $7,029,269, almost double the total for the year-ago month. And orders for the first half of 1959 climbed to $37,952,000, more than double the cumulative total for the corresponding 1958 period. (See table above.)

And business is going to get better. The gear industry, a bellwether for many metalworking industries, reported a gain of 13.8 per cent in bookings for June (see graph above). The index reached 274.2 (1947-49 = 100), the highest since the all-time peak of 299.8 was reached in October, 1956.

Herbert W. Westeren,
Asst. Director of Hayes Research & Development Group, Reports . . .

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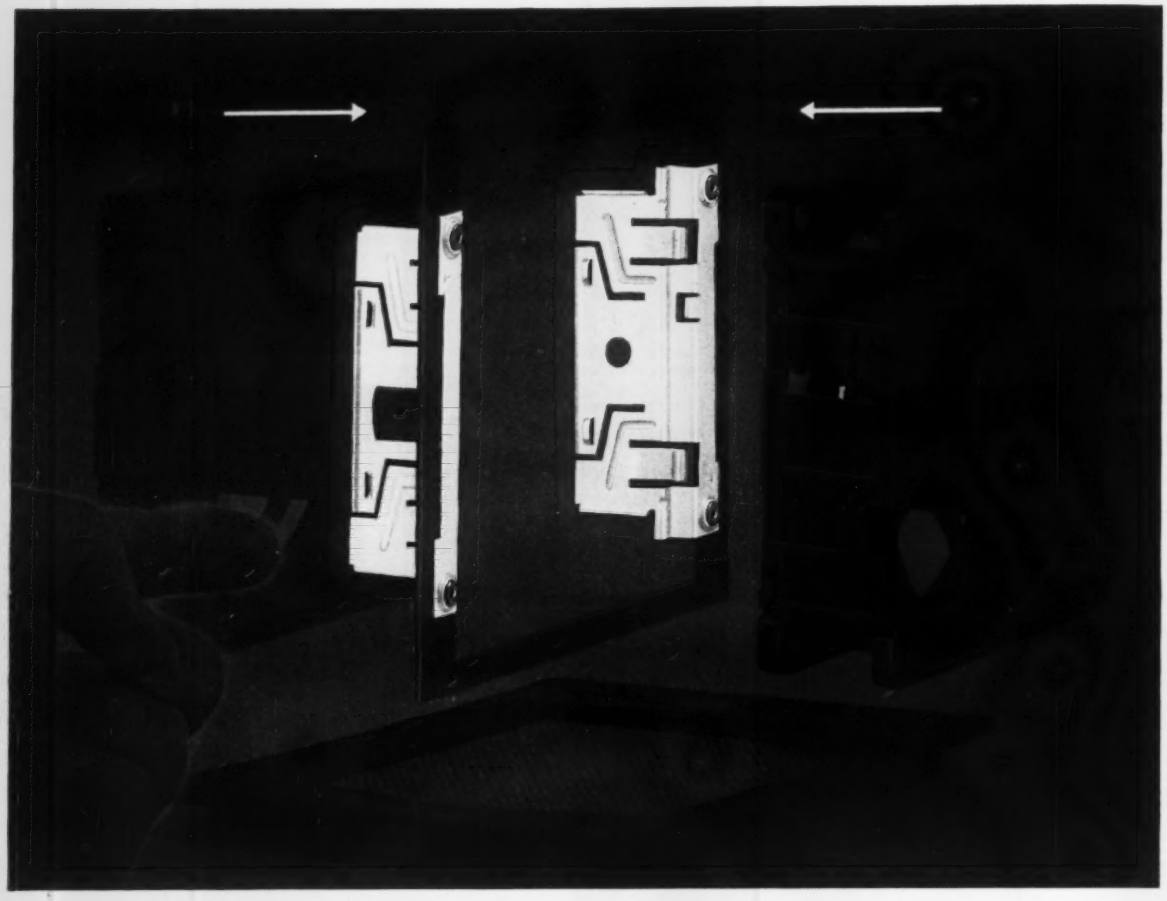

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HAROLD E. KOCH
Basic Products exec. v. p.

GILBERT L. HOLT
mfg. v. p. ACF div.

ROBERT A. JENTSCH
Hydreco Div. mgr.-mfg.

R. THORNTON BEEGHLY
Metal Carbides pres.

Basic Products Corp., Milwaukee, elected **Harold E. Koch** executive vice president. Mr. Koch will continue as president of Hevi-Duty Electric Co., Milwaukee, a division of Basic Products Corp. He will supervise management of Anchor Mfg. Co., and Como-Cast Corp., subsidiaries of Basic Products, and of Hevi-Duty.

Gilbert L. Holt was named vice president-manufacturing, **American Car & Foundry Div.**, ACF Industries Inc., New York. He was works manager of the division's Berwick, Pa., plant.

American Machine & Foundry Co., New York, elected **Frank X. White** and **Hamilton Herman** vice presidents. Mr. White is international group executive and Mr. Hamilton is director of AMF's Research & Development Div. for proprietary products. Both were divisional vice presidents.

William S. Horsefield was elected vice president of **Whitney Chain Co.**, a division of Foote Bros. Gear & Machine Corp., Chicago. He will be operations manager of the company's Hartford, Conn., plant.

Jackson R. Fitzgerald was appointed works chief industrial engineer, **Bucyrus-Erie Co.**, South Milwaukee, Wis.

F. W. Hainer was named president of **Springfield Boiler Co.**, subsidiary of Cleaver-Brooks Co., Milwaukee. Mr. Hainer is executive vice president of the parent corporation.

Robert A. Jentsch was appointed manager of manufacturing, **Hydreco Div.**, New York Air Brake Co., Kalamazoo, Mich. He will be responsible for production, engineering, manufacturing, and production control. Mr. Jentsch was general superintendent, Automatic Transportation Co., Chicago.

C. H. Toensing was appointed manager, powder metals research, **Firth Sterling Inc.**, Pittsburgh.

Dodge Div., Chrysler Corp., Detroit, promoted **Robert B. McCurry Jr.** to assistant general sales manager and **Martin W. Chamberlain** to market analysis manager.

Walter M. Hassenplug was promoted to executive vice president, **Acme Industries, Inc.**, Jackson, Mich. Mr. Hassenplug was vice president and director of engineering.

Howard A. Beiseigel was named purchasing agent for **A-S-R Products Corp.'s** Staunton, Va., plant.

George W. Kross Jr. was promoted to assistant manager, tubing operations, **Tubular Products Div.**, Beaver Falls, Pa., plant of Babcock & Wilcox Co. **G. E. Pletz** will succeed Mr. Kross as superintendent of the division's plant in Alliance, Ohio.

Claude V. Hawk was named to the newly created post of divisional director of reliability, **Harrison Radiator Div.**, General Motors Corp., Lockport, N. Y. Succeeding Mr. Hawk as assistant chief engineer of the division, is **Robert F. Caughill.**

R. Thornton Beeghly was elected president, **Metal Carbides Corp.**, Youngstown, Ohio. He was vice president and general manager. Other officers elected were **J. A. Ritz**, vice president, **D. B. Peterson**, treasurer, and **W. E. Scheetz**, secretary.

William Rodgers was named senior vice president, **Blaw-Knox Co.**, Pittsburgh. He will continue as general sales manager.

Graydon G. Varner was named chief design engineer, **Robert R. Gobert** appointed design engineer, and **Richard Dick** named project engineer of **Midwest Steel Corp.**, a subsidiary of National Steel Corp., Pittsburgh.

American Can Co. appointed **Joseph M. Hall** manager of the Canco Div. coil stock plant, Hammond, Ind. He was manager of the firm's Brooklyn, N. Y., plant.

Chester S. Johns was named general sales manager, **Buhr Machine Tool Co.**, Ann Arbor, Mich.

Walter C. Johnson was made assistant vice president-administration, **Verson Allsteel Press Co.**, Chicago. He was sales manager. **C. J. Warmac** was appointed sales manager, Hydraulic Div. and **Paul C. Kjelstrom** was named sales manager, Mechanical Press Div.

Robert E. French was appointed to the newly created position of general sales manager, **Planet Corp.**, Lansing, Mich. **Robert S. Miller** fills

JOHN E. FARRAND

WILLIAM D. STEELE

Robertshaw-Fulton appts.

N. C. HUNT

LESTER A. BATEMAN

Hunt Valve executives

the new position of assistant general sales manager.

William D. Steele was named director of planning, **Robertshaw-Fulton Controls Co.**, Richmond, Va., and **John E. Farrand** was appointed general manager of the firm's International Div., Richmond, Va. Mr. Farrand will head the company's international operations except those in Europe. Mr. Steele was district sales manager in the eastern states for the company's Grayson Controls Div., Camden, N. J.

"Ace" Vetter was made manager of overseas operations, **Cross Co.**, Detroit.

Russell A. Hastings was elected executive vice president, **K. H. Huppert Co.**, Chicago.

Melvin H. Creter was named superintentendent-industrial relations of Republic Steel Corp.'s **Union Drawn Steel Div.**, Massillon, Ohio.

Lebanon Steel Foundry, Lebanon, Pa., named **Walter H. Flynn** general sales manager. He succeeds John H. Boyd who resigned.

Ernest W. Dockendorff was appointed general sales manager, **Tubular Rivet & Stud Co.**, Quincy, Mass.

Williams Forgings Div., J. H. Williams & Co., Buffalo, promoted **H. Frank Gould** to assistant manager-forging sales.

Southern Electrical Co., Chattanooga, Tenn., an operation of Metals Div., **Olin Mathieson Chemical Corp.**, appointed **H. D. Seaton Sr.** consultant to N. H. Collisson, vice president-general manager, Metals Div., New York, on Southern Electrical manufacturing and sales. Mr. Seaton was general manager of that operation. **Charlton W. Smith** was made Chattanooga plant manager.

A. W. Golling joined **Chrysler and Imperial Div.**, Chrysler Corp., Detroit, as administrative assistant to the general manager.

William Kneen was made chief project engineer, **Analytical & Control Instrument Div.**, Consolidated Electrodynamics Corp., Pasadena, Calif.

Allis-Chalmers Mfg. Co., Milwaukee, named **Earl S. Evans** assistant chief engineer of the Steam Turbine Dept.

Irving A. Hunt was made manager, Contract Services Div., **Federal Products Corp.**, Providence, R. I.

Arthur L. Howard was appointed assistant superintendent, open hearth steel production, **Kaiser Steel Corp.**, Fontana, Calif.

Roy W. P. Johnson succeeds **Charles M. Reable**, retired, as New York district manager, **Cooper-Bessemer Corp.**

Leonard T. Willison was appointed to the newly created position of director-trade relations, **Jones & Laughlin Steel Corp.**, Pittsburgh. He was assistant general manager-sales.

Arthur W. Donkin joined **Mechanical Spring Fabricators Inc.**, Chicago, as vice president and general manager.

N. C. Hunt comes out of retirement to take over as president and chairman of **Hunt Valve Co.**, Salem, Ohio. **Lester A. Bateman** was named executive vice president. **Howard E. Jesko**, treasurer, was named vice president and treasurer, and **Andrew V. Ney** was promoted to sales manager.

Harry W. Pritchard was named sales manager-commercial extrusions, **Superior Industries Inc.**, Youngstown. He was formerly chief engineer.

Gerald J. Lynch was elected vice president, **Ford Motor Co.**, Detroit. Mr. Lynch is general manager of Aeronutronic Div.

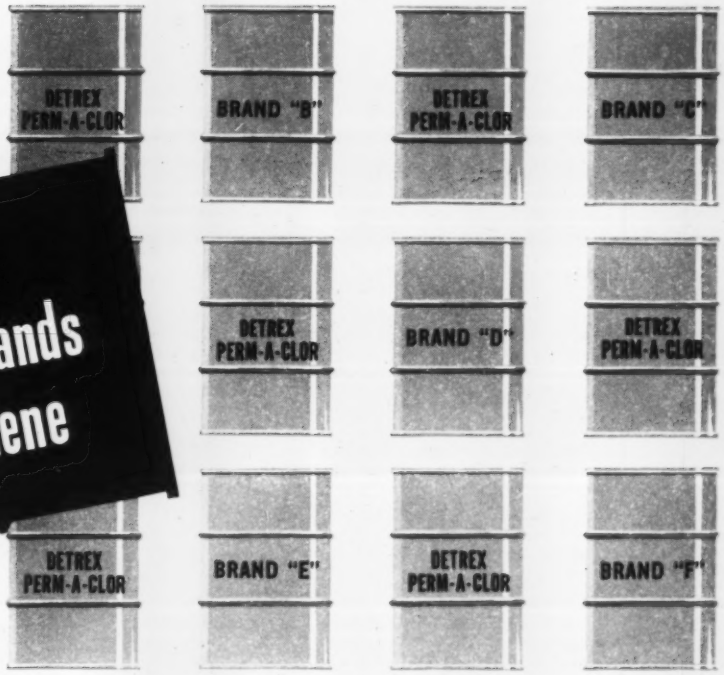
H. F. Alvord was made assistant to the manager of industrial relations at Buffalo for **Colorado Fuel & Iron Corp.** Former superintendent-industrial relations at the Pueblo, Colo., plant, he is replaced by **John H. Stenmark.**

William E. Gephardt Jr. was elected vice president, **Frontier Bronze Corp.**, Niagara Falls, N. Y. He will be responsible for purchasing and production control.

Clifford A. Mesler was made supervisor of bolt sales, **Standard Screw Co., Bellwood, Ill.** He was formerly with Buffalo Bolt Co.

Carpenter Steel Co., Reading, Pa., has promoted **Earl W. Dunkle** to assistant manager, alloy steel sales. Mr. Dunkle was sales supervisor.

A. E. Johnson was named sales manager for welding machines, Weld-



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When DETREX pioneered solvent degreasing and introduced PERM-A-CLOR, more than a quarter of a century ago, it completely revolutionized metal cleaning. Today's PERM-A-CLOR is the finest of trichlorethylene products – the result of years and years of testing and proving, in the laboratory and on the job.

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Pesco v. p.-eng.

HERBERT A. FRANCE JR.
Pratt & Whitney mgr.

CHARLES E. DEMARS
Tranter Mfg. plant eng.

RUSSELL E. EMRICH SR.
Boiler Eng. pres.

ing Products Div., **A. O. Smith Corp.**, Milwaukee.

Herbert A. France Jr. was made manager of quality control for **Pratt & Whitney Co. Inc.**, West Hartford, Conn. He will head all manufacturing quality control and inspection operations of the company's machine tool, cutting tool, and gage divisions.

Tranter Mfg. Inc., Lansing, Mich., appointed **Charles E. DeMars** plant engineer. He will be responsible for tooling, equipment, and layout.

William R. Butler was appointed manager-casting sales, **Aluminum Co. of America**, Pittsburgh.

Carlton D. Dougherty was appointed director of industrial engineering, Lock & Hardware Div., **Yale & Towne Mfg. Co.**, White Plains, N. Y.

Peter Leckie-Ewing has joined the metallurgical staff of **Latrobe Steel Co.**, Latrobe, Pa. He was formerly associated with Landis Machine Co.

Russell E. Emrich Sr. was elected president and chief executive officer, Boiler Engineering & Supply Co. Inc., Phoenixville, Pa. Mr. Emrich was executive vice president, general manager, and secretary. **Russell E. Keen**, former president and treasurer, was elected chairman and assistant treasurer.

Richard Cory was appointed director of marketing, **Bostrom Corp.**, Milwaukee.

John A. Matousek was made vice president and general manager of **Acme Precision Products Inc.**, Dayton, Ohio.

Arthur L. Howard was made assistant superintendent of open hearth steel production at **Kaiser Steel Corp.'s** Fontana, Calif., plant. He was superintendent-Open Hearth Dept. at Granite City Steel Co.

Charles W. Glunk was made manager of basic sales and service of the new basic refractories plant, Tarentum, Pa., of **A. P. Green Fire Brick Co.**

W. K. Allen Ferguson was named general manager, Light Metals Mfg. Div., **Reynolds Metals Co.**, Richmond, Va. He will head all operations of the foil and printing divisions. **L. R. Payton** was made executive assistant to the executive vice president of the company.

Bartlett Richards was appointed vice president and director of planning, **Acme Steel Co.**, Chicago. He will be responsible for formulation of long range objectives, plans, and programs in the improvement and expansion of the company's production facilities. He joined the company in 1933.

Ted R. Thoren was appointed vice president-engineering, **Pesco Products Div.**, Borg-Warner Corp., Bedford, Ohio. Mr. Thoren will be responsible for research and development engineering activities at Pesco.

Paul J. Chaney was made general sales manager, Metals Processing Div., **Curtiss-Wright Corp.**, Buffalo. He was product sales manager for tubular products.

Edwin A. Rutchow was elected vice president-sales, **Higgins Metal Products Co.**, Swanton, Ohio.

Richard F. Armitage was made senior assistant district manager, Warren district, **Republic Steel Corp.**

William A. Frederick was made superintendent of the new North Processing Dept., Butler, Pa., Works, **Armco Steel Corp.**

Bucyrus - Erie Co., Milwaukee, named **Douglas E. McCuaig** product engineer in charge of its Hydrocrane Div.

OBITUARIES . . .

Donald Alexander, 68, director, **Budd Co.**, Philadelphia, died July 20.

Preston Roy Deming, 44, general sales manager, **Strong, Carlisle & Hammond Co.**, Cleveland, died July 21.

Charles O. Slaght, 65, general purchasing agent, **Aircraft Engine Div.**, Ford Motor Co., Chicago, died July 18.

AMERICAN ORIGINALS IN IRON AND STEEL

Helping the iron industry out of the woods

Until as late as 1840, charcoal was the fuel universally used in making iron. Picturesque brick and stone furnaces were, of necessity, confined to the forests, for large quantities of it were needed to keep the furnaces in operation. Some consumed as much as 350 bushels of charcoal to produce a single ton of iron and many of the early ironmakers believed that at least four square miles of woodland should be available for each furnace.

During the first half of the century, important discoveries contributed to fundamental changes in ironmaking which later helped the industry "out of the woods." Early in that period, many experiments were made using anthracite and bituminous coal and mixtures of the former with charcoal.

In 1835, "cooked coal" or coke was first used successfully in this country by William Firmstone of Huntingdon County, Pennsylvania. Later, as the coke process proved increasingly successful, the familiar beehive ovens sprang up by the hundreds, permitting the construction of furnaces at locations more convenient to both markets and raw materials.

Of the many products that are contributing to the progress of the iron and steel industry today, Baker's Magdolite and Jebcolite, the original dead-burned dolomites, are especially identified with economical and efficient production. Through the years, these products have provided increased furnace efficiency and more uniform ingots at lower refractory costs. When you buy, be sure to specify Baker's Magdolite or Jebcolite. Today, they're better five ways; in composition, preparation, strength, economy, and quality.

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National Steel Speeds $300 Million Expansion

RAPID PROGRESS is being made by National Steel Corp., Pittsburgh, in carrying out its $300 million, three year expansion program (STEEL, Feb. 23, p. 47) at properties of its subsidiary companies.

• **Weirton Steel**—Two electrolytic tin plating lines and two continuous annealing lines have been installed at the Steubenville, Ohio, plant of Weirton Steel Co., Weirton, W. Va. Capacity of the mill is now 18,000 tons of electrolytic tin plate, 9000 tons of hot dip tin plate, and 3000 tons of black plate.

The new lines can handle coils 32 in. wide and 64 in. in diameter, weighing up to 20,000 lb, at a speed of 600 fpm. The plating lines are the alkaline vertical type. The mill also has four electrolytic plating lines of the Halogen horizontal acid type.

Annealing was formerly done at the Steubenville plant by the portable box batch process. That is being replaced by continuous coil type annealing. The annealing lines have a monthly capacity of 21,000 tons. The plant also has box type annealing capacity of 10,000 tons a month.

• **Great Lakes Steel**—A contract has been awarded to Linde Co., a division of Union Carbide Corp., New York, for construction of a 500 ton a day (365 million cu ft a month) oxygen plant at Great Lakes Steel Corp.'s Ecorse, Mich., site. About 80 per cent of the oxygen produced will be used in the open hearth furnaces to improve and speed the steel melting process; 10 per cent, for mechanized scarfing; and the balance will supply other finishing processes and general maintenance requirements.

A contract has been awarded to Whitehead & Kales Co., Detroit, for erection of about 15,000 tons of structural steel for buildings which will house Great Lakes Steel's new 80 in. continuous hot strip mill and auxiliary equipment.

• **Midwest Steel**—Several additional contracts have been placed for the entirely new steel finishing plant which is being built on Lake Michigan in Porter County, Indiana. Awards were made as follows:

Bethlehem Steel Corp., New York, for erection of about 30,000 tons of steel for buildings which will house facilities for the production of hot and cold rolled sheets and strip, galvanized steel, and tin plate.

Mesta Machine Co., Pittsburgh, for a five stand tandem cold reduction mill and a two stand temper mill.

Westinghouse Electric Corp., Pittsburgh, for electrical equipment for the five stand tandem cold reduction mill.

Allis-Chalmers Mfg. Co., Milwaukee, for electrical equipment for the two stand temper mill.

Wean Engineering Co., Warren, Ohio, for an 80 in., raw coil, pickle line which will include a two high scale breaker; a Halogen process electrolytic tin plating line; and an 80 in., hot process line which will combine a two high temper pass mill, coiling, and shearing facilities.

Aetna-Standard Engineering Co., Ellwood City, Pa., for a 48 in., continuous galvanizing line; a 45 in. continuous annealing line; a 48 in. cold cut-up line which will include facilities for coiling, piling, and packaging and a coil preparation line for processing of steel coils prior to tin plating.

Arthur Colton Expanding

Arthur Colton Co., a division of Snyder Corp., Detroit, is enlarging its facilities for the production of packaging machinery. The project is the result of the recent acquisition of Hope Filler Co. and a manufacturing arrangement with Alpha Engineering Works to make aerosol filling equipment. The packaging machinery will be made in the Mancelona, Mich., plant. The company is building a new plant in Elk Rapids, Mich., to manufacture the punches and dies now made at Mancelona. Henry Collins will serve as plant manager for the Mancelona and Elk Rapids operations.

Makes Steel Plant Awards

Consolidated Mining & Smelting Co. of Canada Ltd., Montreal, Que., has awarded three contracts for construction of its $20 million steel plant at Kimberley, B. C. (STEEL, May 11, p. 103). Erection of buildings and installation of equipment will be done by Foundation Co. Sintering equipment will be supplied by Lurgi Co., Frankfurt, Germany. The first electric pig iron furnace will be supplied by Elektrokemisk, Oslo, Norway. Major installations are scheduled to get underway next March.

Plans Electronic Center

Raytheon Co., Needham, Mass., will establish a wholly integrated electronic warfare center in Santa Barbara, Calif. Consolidated in the center will be Government Equipment Div.'s engineering, production, and marketing of its widespread interests in the countermeasures, counter-countermeasures, and infrared fields. Gordon S. Humphrey, assistant vice president, will head the Santa Barbara Subdivision. Production in the countermeasures and infrared fields will be shifted to Santa Barbara area from Massachusetts.

Bliss to Sell Plant

E. W. Bliss Co., Canton, Ohio, is selling its inactive manufacturing facilities in Toledo, Ohio. Formerly a metalworking press manufacturing plant, the facilities include a 165,000 sq ft Meehanite foundry which can handle castings weighing up to 60 tons and a 230,000 sq ft heavy machine shop. Manufacture of machines formerly made at Toledo has been consolidated at the company's Hastings, Mich., and Canton plants.

Century Electric to Build

Century Electric Co., St. Louis, will build a plant at McMinnville,

Tenn., enabling it to expand its motor line. R. J. Bathe has been named manager of the new plant.

Buys Breakdown Mill

Anaconda Aluminum Co., a subsidiary of Anaconda Co., New York, has ordered a 66 in., four high, aluminum breakdown mill. It is the major part of a $2.5 million expansion program to increase production of aluminum strip at the Terre Haute, Ind., plant. The mill will be built in the Glassport, Pa., plant of Pittsburgh Engineering & Machine Div., Pittsburgh Steel Foundry Co., Pittsburgh. Scheduled for operation in February, 1960, the mill will produce strip with a minimum thickness of 0.012 in. and a maximum width of 60 in.

Hi-Duty Drill to Expand

Hi-Duty Drill Works, a division of Hi-Duty Industries Inc., Fleetwood, Pa., has launched a ten year expansion program. It includes a complete retooling of the plant's machinery.

Forms Metalspin Inc.

Metalspin Inc. has been organized in Ft. Atkinson, Wis. R. C. Carmichael is president. The shop is affiliated with Norland Associates, an engineering firm in that city.

ASSOCIATIONS

Pittsburgh Chapter of the **American Foundrymen's Society,** elected the following officers: President, J. D. Wilson, Bronze Die Casting Co., Pittsburgh; vice president, W. D. Hacker, Mesta Machine Co., Homestead, Pa.; and secretary-treasurer, E. P. Buchana, Pittsburgh Coke & Chemical Co., Pittsburgh.

Head office and Ontario Regional office of the **Canadian Institute of Steel Construction Inc.** moved to 388 Yonge St., Toronto 1, Ont.

Ray T. Bayless will retire Sept. 1 as assistant secretary, **American Society for Metals,** Cleveland. His service to the engineering society covers 37 years.

CONSOLIDATIONS

Motch & Merryweather Machinery Co., Cleveland, acquired **Modern Tool Corp.** and **Radial Cutter Mfg. Corp.,** Elizabeth, N. J., manufacturers of carbide tipped circular saw blades. Facilities will be moved to Cleveland and made a part of Motch & Merryweather's Cutting Tool Mfg. Div.

Barry Controls Inc., Watertown, Mass., is acquiring **West Point Mfg. Co.,** Detroit, through **Vlier Engineering Corp.,** Los Angeles, a Barry subsidiary. The business will be operated as the Wespo Div. of Vlier, producer of expendable tooling accessories.

American Pipe & Construction Co., Monterey Park, Calif., merged with **Nukem Products Corp.,** Buffalo. Nukem will be allied closely with Amercoat Corp., an American subsidiary at South Gate, Calif., since both produce complementary products designed to solve corrosion problems in the metal trade. G. E. Seidel, executive vice president of Amercoat, will unify the combined operation, while J. W. Chandler will direct the Buffalo operation.

O. S. Walker Co., Worcester, Mass., acquired **Buck Mfg. Co.,** San Jose, Calif., producer of portable magnetic drill presses and related products. Walker makes magnetic chucks. R. F. Carey is general manager and secretary of the organization in San Jose.

Consolidated Mining & Smelting Co. of Canada Ltd., Montreal, Que., purchased **National Hardware Specialties Ltd.,** Dresden, Ont., producer of zinc diecastings. J. F. Buckingham will head the Dresden operation.

United States Chemical Milling Corp., Manhattan Beach, Calif., acquired **Darco Industries Inc.,** El Segundo, Calif., and will operate it as a subsidiary under G. R. Roland, president. Darco operates Flotrusion, Gyro-Dynamics, Val-Aero, and Pacific Gage Divisions.

Cross Co., Detroit, builder of automation machinery and equipment, acquired **Stephen F. Malaker Associates,** consultants in the nuclear and electronic fields. Cross renamed the subsidiary Cross-Malaker Laboratories Inc. and established research laboratories and administrative facilities in Mountainside, N. J.

Aerotec Industries Inc. has established executive offices in Greenwich, Conn. Officers are: Chairman, L. C. Whiton; president, J. E. Watson; and executive vice president and treasurer, Jacques G. Mejean. The firm was formed by merging these companies: **Prat-Daniel Corp.,** South Norwalk, Conn.; **Aerotec Corp.** and **Thermix Corp.,** Greenwich; and **Aerotherm Corp.,** Bantam, Conn.

NEW OFFICES

Republic Mfg. Co., Cleveland, maker of hydraulic valves, will open a branch office at 18600B Amigo St., Northridge, Calif., on Sept. 1. Carl Drenske will be manager.

Daystrom-Weston Sales Div., Daystrom Inc., Elizabeth, N. J., opened new branch offices in New Orleans under Jess S. Smith and in Cedar Rapids, Iowa, under Carl G. Ketel. A new district sales office has been opened in Seattle; R. K. Patterson is manager.

NEW PLANTS

Pennsylvania Transformer Div., McGraw-Edison Co., Canonsburg, Pa., opened a new department for the manufacture and sale of secondary unit substations and low voltage switchgear. Facilities include those for sheet metal fabrication, welding, plating, assembling, and testing. Transformers for the substations are manufactured in the adjacent main plant of Pennsylvania Transformer.

Rheem Semiconductor Corp., a subsidiary of Rheem Mfg. Co., Chicago, is building a plant at Mountain View, Calif. Semiconductors, diodes, and transistors will be produced in the 100,000 sq ft facility. Dr. E. M. Baldwin is vice president and general manager of Rheem Semiconductor.

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. . . and Carlson special stainless steels withstand the extremes of another launching

When this missile "lifts off," Carlson special stainless steel plates help launch it into space. These plates are the high strength, precipitation-hardening grades. And there are sound reasons why these grades are used.

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Second, only Carlson produces these Armco grades in the heavier plate thicknesses. For applications where high strength at high temperatures and ease of fabrication are important, get plates in these grades from Carlson. We will be glad to work with you on specific applications.

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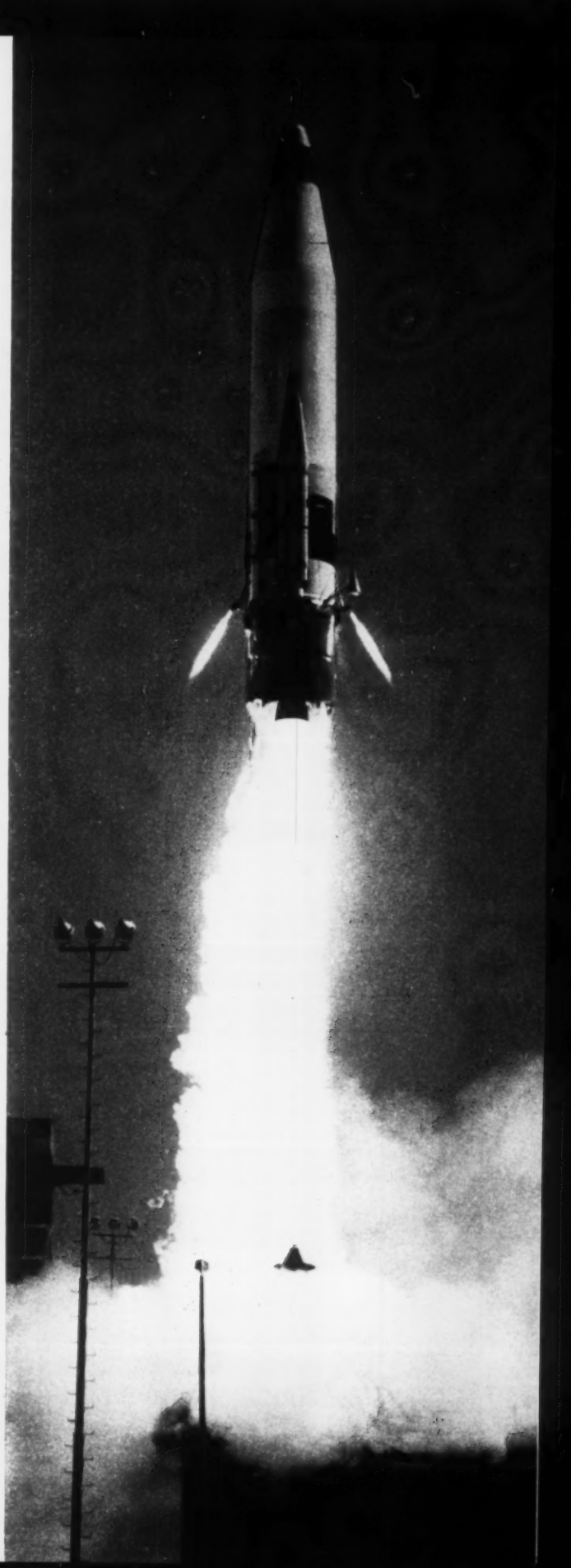
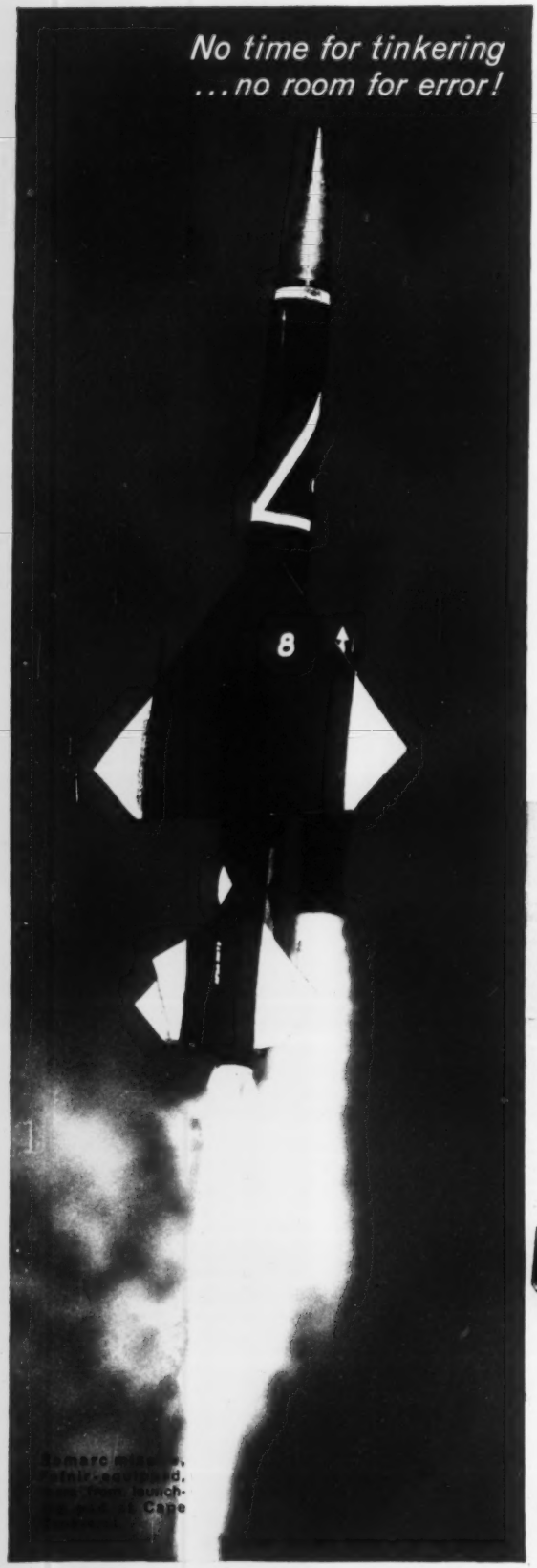


Photo of Atlas missile courtesy
CONVAIR ASTRONAUTICS,
A Division of General Dynamics Corp.



Fafnir Ball Bearings help keep Bomarc missiles "on tap"...and on target!

Used in the outboard rudder control gear box of the Boeing Bomarc, Fafnir ball bearings meet several important design requirements for Indiana Gear Works, designers of this vital missile component.

Fafnir prelubricated and shielded ball bearings and bearings with Plya-Seals, for example, provide positive, built-in protection against contaminants. These bearings remain trouble-free, require no servicing, help keep the Bomarc ready to go at moment's notice.

Uniform high quality is another must. Fafnir quality control insures bearings that consistently meet exacting tolerance and dimensional requirements, installation after installation.

Your own design problem may not involve missilery. But if it calls for ball bearings, look to Fafnir. You'll find the diversity of line and breadth of experience that assure precise answers. Write The Fafnir Bearing Company, New Britain, Connecticut.

Rudder control gear box, developed by Indiana Gear Works of Indianapolis, incorporates both Fafnir contact-type Plya-Seal ball bearing, extra-light series (left) and Fafnir double shielded type.

FAFNIR
BALL BEARINGS

PROGRESS IN HOT SHAPING— Work on titanium and high temperature metal shaping is being pushed by Boeing Airplane Co., Seattle. Its new, 500 ton Pacific press brake is loaded with quick-adjustable devices to vary dwell, descent, and soak rates during forming.

50 PER CENT STRONGER FOIL— Reynolds Metals Co.'s household line will be made of a purer aluminum alloy which is said to be 50 per cent stronger than the current product. Alloying elements comprising less than 1 per cent of the composition are said to be responsible for the improvement.

CERAMIC CAN TAKE SUPERHEAT — The Thor-Able which withstood 12,000° F on re-entry was covered with a reinforced ceramic material. The Research & Development Div., Avco Mfg. Corp., New York, says the material can also be considered for other applications requiring high structural stability at elevated temperatures.

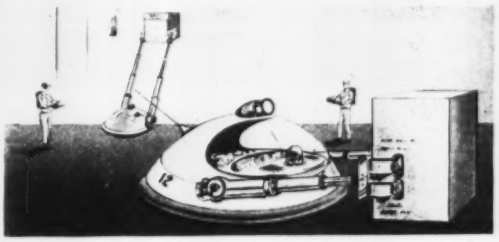
FLOATING CONVEYOR— Sensitive, fragile materials need supersensitive handling devices. A new, sintered porous nickel, called Cormet, makes an ideal material for noncontacting conveyors, says Corning Glass Works, Corning, N. Y. Products ride on a thin cushion of air forced through the pores. It withstands 575° F.

POWDERS GET NEW TEST— Whether powder metallurgy can improve extruded high temperature alloys is the question being probed by Clevite Corp.'s Mechanical Research Div., Cleveland. The firm will make a variety of billets from powders to check the effects on physical properties.

NEW VISTAS FOR LAMINATES— Recent technical advances make it possible to bond almost any compatible material into a laminate to get a combination of properties, declares Taylor Fibre Co., Norristown, Pa. Examples: Rubber and metals; lead and paper (for radiation shields); aluminum and plastics (for engraving); beryllium copper and plastic (electronics); stainless or magnesium plus other materials (for corrosion resistance or lightweight paneling).

GIANT ROCKET TEST STAND— An eight-story test stand at Edwards Air Force Base, Calif., will hold four rocket engines, each with a thrust of 1.5 million lb, says Aerojet-General Corp., a subsidiary of General Tire & Rubber Co., Azusa, Calif.

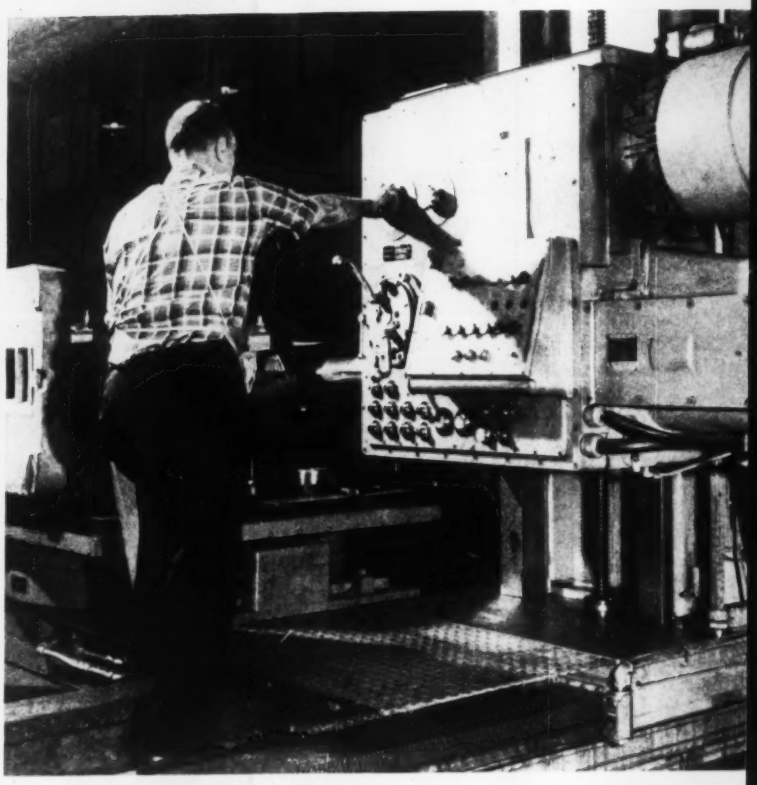
NOVEL BRUSHED FINISH— Nylon - abrasive fibers (they are mixed with the nylon before forming) are used to make brushes which give metal surfaces an exceptionally fine matte finish. Applications are strictly decorative, not for stock removal, says Behr-Manning Co., a division of Norton Co., Troy, N. Y.



LIFT TRUCK OF TOMORROW will have no operator, says Robert A. Vance, development engineering, Elwell-Parker Electric Co., Cleveland. Atomic energy will be converted serially to heat to electricity to hydraulic power for operation. Programed instructions on cards will be inserted by a handling supervisor. Trucks will be sensitive to heat, pressure, or reflected sound. Energized stickers on boxes will aid in locating the correct load

SPACE AGE SEALS— Metals may be the only answer to seals for tomorrow's airplane and missile hydraulic systems, says C. E. Hamlin, Autonetics Div., North American Aviation Inc., Los Angeles. Such devices are expected to hold exotic fluids at 1000° F and 6000 psi, yet retain workability at minus 65° F too. One "fluid" being considered: A metal with a low melting point.

Machine Builder Cashes In on Tape Controlled Production



The operator supervises as this tape controlled horizontal boring mill takes over on the production of complex machine tool components

Payoff time for the machine is calculated at four years as automatic positioning trims cycle times by more than 50 per cent and boosts precision

TAPE controlled machining is saving $8594 a year in unit hour reductions on four parts at Brown & Sharpe Mfg Co., Providence, R. I. On the same jobs, B&S saved $36,000 on tooling.

Even though machine tool production was off during the recession, James Rowley, superintendent of milling and grinding machine group, expects the tape guided, Kaukauna horizontal boring, drilling, and milling machine to pay for itself in about four years. It was made by Kaukauna Machine & Foundry Div., Giddings & Lewis Machine Tool Co., Kaukauna, Wis.

• **Short Lot Natural**—Mr. Rowley feels that machine tool production is ideally suited for numerical control. Most parts are repetitive enough to justify some tooling or programing time. Yet the normal lot size is too small to justify full-scale mass production approaches.

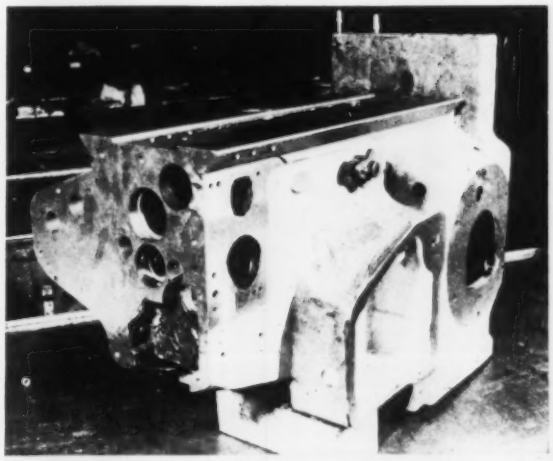
Managers who consider numerical control sometimes fear the programing — an art unfamiliar to most metalworking teams. "No problem," says Mr. Rowley. Two familiar skills (part layout and job setup) are all that were required to prepare data and punch the tape.

As for programing economy: "On a highly complex grinding machine bed, it took us 35 hours to complete the programing, but in production we regained that time in the first six parts."

• **Tooling Costs Dip**—Most of the work now going on the Kaukauna machine used to be done on radial drills. This meant that jigs and fixtures had to be designed and built for each part.

That cost is eliminated. So is the cost of maintaining and storing the tooling. Now, except for the cost of preparing the tape, the total tool cost is in boring bars and oth-

50 PER CENT SAVINGS in unit production hours on these milling machine stands were brought about by tape controlled drilling, boring, milling, and tapping. The parts are typical of those run on the machine



42 PER CENT SAVINGS in unit hours helped cut the cost of processing all holes in the four sides of this milling machine knee. Most of the savings are in reduced handling time

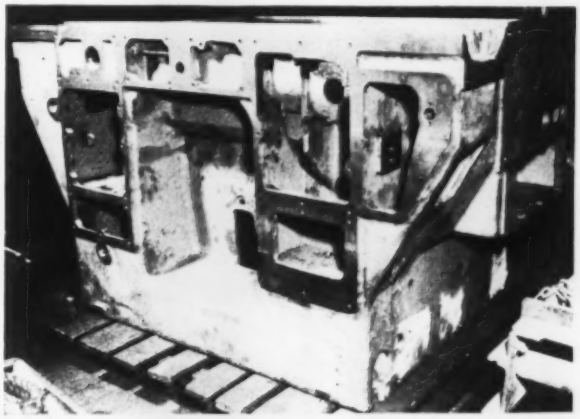
er cutting tools. Mr. Rowley says that a complete set of cutting tools is prepared for each job, but many of these tools are standard. The sets can be broken and the tools re-used on other jobs. This flexibility isn't possible with jigs and fixtures.

As for the production gains: "We have found it is reasonable," says Mr. Rowley, "to expect savings of 25 to 50 per cent on any part we make on the machine in comparison with any other applicable method."

The savings that are paying for the installation can be attributed mostly to reduced handling of the parts, the machine, and the tools. To add to the benefits of numerical control for short lots, Mr. Rowley says they have found that eliminating some of the always variable human element has helped produce closer tolerances (both in hole size and location) than could be achieved before.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

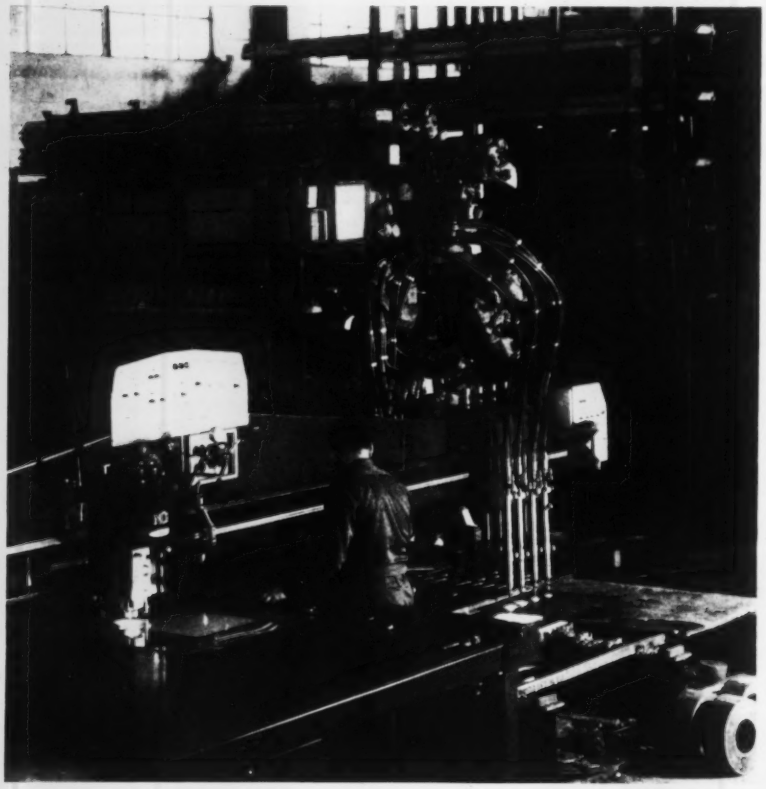
78 PER CENT SAVINGS in time resulted when these arbor yokes (two different styles are made) were put on the tape controlled machine



38 PER CENT SAVINGS in unit hours on this grinding machine bed show advantage of tape control, even over a specially set up rotary-table machine that was used for the job

This Electronic Control

Speeds Cut Shape Delivery



A TRACER controlled flame cutter increased business for Hawkridge Bros. Co., Boston, "many times over," declares Geoffrey C. Brown, manager of operations. (The firm operates a steel warehouse.)

"Until recently, we were handicapped in competing for plate business because we couldn't deliver cut shapes as fast as big firms.

"Now we operate on two shifts," he adds.

The $14,000 device which made the difference is built by NCG Div., Chemetron Corp., Chicago. The control works from a pencil drawing on white paper and follows the pattern described within plus or minus 0.005 in. The cutting torch follows along at speeds up to 25 ipm. Products are guaranteed to within plus or minus $\frac{1}{8}$ in. Tracer motion is not affected by crossing lines unless they intersect at an angle of less than 45 degrees.

"Knowing the tolerances we can hold enables many of our customers to ask for greater precision and speed than they have been used to," says Mr. Brown.

• **One customer got his order less than an hour after it was placed.** Here's an example of what Mr. Brown calls fast service.

"Of course, delivery time varies. One customer came to our Malden (Mass.) warehouse with an aluminum template of a bearing cap for a press which had just broken down in his plant. While he waited, we drew a pencil outline and cut the part from 10½ in. plate in less than an hour."

The significance of that story: Flame cutting saved more than 10 hours machining time for the customer, who also gained by getting the press back on the line that much sooner.

• **Four types of shapes are made.** Straight cut: Sizes range from 5 in. by 14 in. in ¾ in. plate to 3 ft by 7 ft. Hawkridge says the cost of flame cutting is similar to that of an abrasive saw. It also handles bars and heavy forms.

Discs and rings: Gear and sprockets, pipe closures, and pressure vessel sections are typical. The machine can cut a 1 in. hole in an 8 ft disc.

Machine sections: Many builders ask the warehouse to supply

precut shapes for fabricating machine tools.

Decorative pieces: Most commonly used materials are ordinary carbon and free machining plates up to 12 in. thick.

Customers often order fairly large quantities—750 is the largest to date.

• Electronic line tracer can be installed on any flame cutting machine.

The Hawkridge machine is entirely new, says National Cylinder Gas. It has an electronic scanner, drive, and a control panel. The optical scanning system follows any line less than 0.040 in. wide. The tracing head turns a minimum radius of 3/32 in.

Hawkridge either gets a detailed engineering drawing or makes one up from oral or written descriptions (some are kept in a file for repeat orders). One shot orders get a pencil tracing; those which will be repeated are inked.

The operator places the drawing on the cutting table and covers it with a sheet of transparent plastic. The machine is manually guided until a pinpoint of light is directly on the pattern line. A switch starts the cutting.

After the job is started on the machine, the operator doesn't need to give it any more attention. He can position more plates for subsequent cuts while the first one is being made.

National Cylinder Gas says a man with some experience can learn to operate the machine in less than 4 hours.

Diecast Engine Patented

The solution to an economical diecast engine block is contained in a patent just issued to Doehler-Jarvis Div., National Lead Co., Toledo, Ohio. The design eliminates undercuts, projections, and blind passages, and shaves 150 lb from the weight of its gray iron counterpart. It capitalizes on aluminum's high thermal conductivity by using smaller water channels and a smaller radiator which adds to the weight savings.

The first aluminum blocks cast eight years ago were for four-cylinder engines. Limit then: 28 lb. The new machine can cast 75 lb.

Firm Takes Own 'Medicine,' Cuts Production Time 62%

Savings came by switching from manual to semiautomatic welding and putting blanking press next to welding operator, eliminating handling from a distant department

WELDING time on transformer cores was reduced 62 per cent by consolidating operations from two departments into one automatic station and changing to semiautomatic CO_2 welding, says Hobart Bros. Co., Troy, Ohio.

The firm is a leading manufacturer of welding equipment.

Other advantages: Less material is used; a punch press operator is eliminated; trucking and handling of laminations as well as transfer between fixtures are no longer needed; trucking of completed core pieces to the winding department is eliminated because the departments are next door to each other. Daily production is 45 cores compared with 25 under the former method.

• "It was a case of taking our own medicine to keep costs in line," concludes Paul Hufford, foreman of the core department.

"The old method was wasteful and required too much handling—something we have always told our customers."

Previously, laminations of 26 gage electrical steel were blanked in the press department and trucked to the core department, where an operator clamped 420 in a jig and manually welded them with three, 7 in. welds.

From there the pieces went to another jig which held two assemblies back to back. Welding made them into inner core pieces for transformer windings.

Now such operations have been consolidated into one automated station. Electrical sheet steel in coils is delivered to the station and fed to an automatic press. The L-shaped blanks from the press are placed in a pneumatic fixture and welded with a semiautomatic (Migarc) unit using carbon dioxide for shielding. (A reactor is used to reduce wire consumption and spatter.) Welding speed is 14 ipm compared with 9 ipm formerly.

Metal Change Boosts Life Of Heat Treating Hoods

Covers on Plume & Atwood's annealing furnaces have to take temperatures up to 1450° F repeatedly. If they fail, coils of strip copper or other valuable metal may be damaged. The covers lasted only about six months until three nickel-iron-chromium hoods were tested. They performed so well that the company now uses the alloy on all 16 of its furnaces

Hood is removed from the furnace with an overhead crane after coils of Monel strip have been annealed for 3 hours at 1450° F

CHOOSING material for a special application? You'll want to think about the properties it needs to avoid frequent repairs and replacements. Heat treating hoods, for example, must be made of metal that can take repeated exposure to high temperatures.

Hoods made of Incoloy, a nickel-iron-chromium alloy, last over six times as long as those previously used at Plume & Atwood Mfg. Co., Thomaston, Conn. They were produced by Rolock Inc., Fairfield, Conn. Metal was supplied by International Nickel Co. Inc., New York.

• Hoods are used for bright and temper annealing, at temperatures up to 1450° F.

The company produces sheet and strip brasses, bronze, nickel silvers, copper, and phosphor bronzes. Some of the materials are temper annealed, but most are bright annealed.

Monel nickel-copper alloy strip is held at about 1450° F for 3 hours. It's heated at 2000 lb per hour. Most other metals are annealed at 1200 to 1400° F for varying periods.

Two exothermic gas generators supply atmosphere for the hoods. Generators and bases are checked twice a week with a gas analyzer. During annealing, hoods are sealed with water, or with water and oil.

• To solve its problem, the company specified a material that could take annealing temperatures and protect finished strip in an exothermic atmosphere.

Formerly, the hoods lasted about six months. Repairs were needed for one of the 16 covers every two days. Each repair took about 4 hours, and cost about $25 in labor and material.

Hood failure also allowed air to reach the coils being heat treated. That caused oxide to form on the material, increasing cleaning time and slowing production.

Three of the alloy hoods were tested for two years. After 20,000 hours of operation, they're still in good condition, says Robert J. Smith, assistant plant engineer. Two minor repairs were made on one hood; no other maintenance was required.

The company was impressed with performance of the test hoods; the alloy is used now for all 16 covers in the plant. Quality control has improved, and savings in maintenance costs have paid for the first three hoods.

• One cover is made entirely of Incoloy; mild steel is used in parts of the others.

All hoods are of the same basic design, but they're made in two sizes. The larger ones, 62 in. in diameter at the smallest section and 79 in. high, hold up to 12,000 lb of coiled strip. The smaller ones, 42 in. in diameter and 87 in. high, hold about 8000 lb of material.

The all-alloy hood is used only to anneal electrolytically refined copper strip, which is extremely sensitive to oxygen, and could be ruined if air entered the chamber. On the others, the skirts (the parts that rest on furnace hearths) are made of mild steel.

Hardfacing Trims Die Cost $12,000

Nickel-base alloy reduces erosion and washout caused by hot flash on auto forgings

HARDFACING the flash line on new forging dies saves one of the Big Three automakers over $12,000 a year.

Hastelloy C, a nickel-base alloy, reduces erosion and washout caused by the hot flash on forgings. Added advantages: Deposits are easy to lay down and machine; production scrap has been reduced 50 per cent.

The plant also reports it gets 250,000 more forgings a year on the same equipment—the production increase averages 338 forgings per machine, per shift.

• The parts support the front wheels of autos.

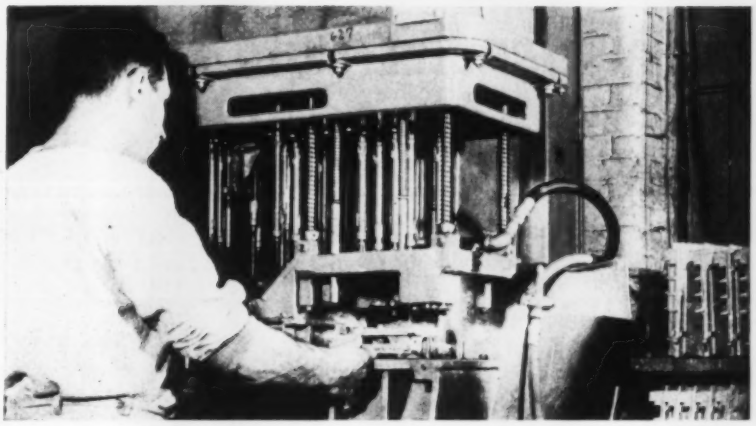
Forging the steering knuckle and knuckle support for the front end of a car means high temperature and impact for the blocking die and pressure and somewhat lower temperatures for the finishing die.

Experience has shown that the dies can be reclaimed three times by hardfacing before they have to be replaced. By not wearing, hardfaced dies hold flash to a minimum and prolong hot trimmer die life. Scrap is reduced because edges hold up longer, reducing the need for restriking.

• Hardfacing is applied by welding.

On each die block, a groove is milled deep into the area along the flash line (it takes about 8 lb of alloy to fill the steering knuckle die). Once faced, the die is tempered and stress relieved in a recirculating air draw furnace at 1150° F for 5 to 7 hours, depending on die size.

The auto division expects to put Hastelloy on crankshaft dies. People at Haynes Stellite Co., a division of Union Carbide Corp., New York, which makes the alloy, say it will work on any forging die where the major wear is on the flash line.



This high speed multiple spindle unit is part of a machine changeover that cut machining costs 81 per cent for the Dictaphone Corp.

Right Machining Methods Save Over $1 a Part

Fast, multispindle units drill 97 holes in magnesium castings and preform 150 secondary operations. Firm gains flexibility to meet variations in production schedules

THE SWITCH to milling and multiple spindle drilling and tapping machines toppled costs 81 per cent for Dictaphone Corp., Bridgeport, Conn. The saving is over $1 per piece, not counting improved quality control.

The parts are gripped gently by the fixtures to prevent warping stresses from affecting tolerances. Skipped or creeping holes are eliminated.

The part is a magnesium frame of a new dictating machine. High speed machines drill 97 holes and do 150 secondary operations on this part—reaming, tapping, counterboring, and countersinking. Holes are $\frac{1}{8}$ to $\frac{1}{2}$ in. in diameter.

Machines on the line are grouped to operate together or independently. Parts are banked at each machine. Production can be continuous or intermittent, with one operator tending several machines in sequence. This flexibility means production schedule variations are no problem.

• Machining Sequence—After being cleaned and heat treated, 24 holes are drilled in the castings, two are reamed and four counterbored by a Natco H-6. Next the faces are trued and brought to final dimensions by a profiler and two horizontal millers. Then the frames start down the rest of the line.

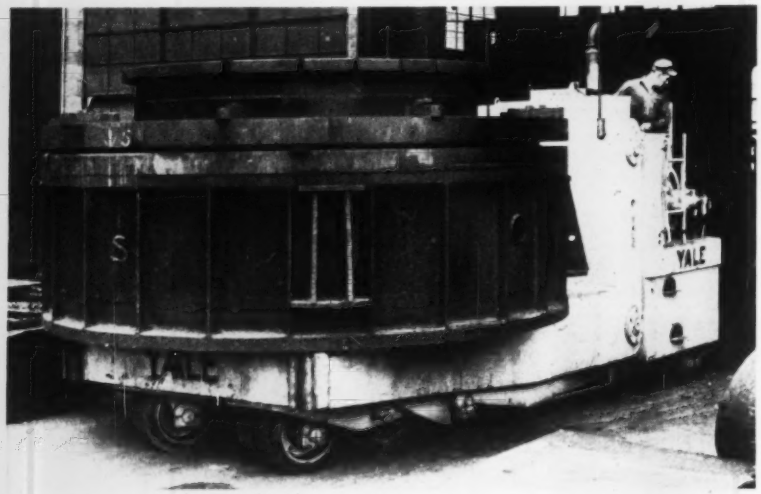
Machines No. 2 and 3 drill 46 holes, counterbore three, and ream five. Fifty-one holes are tapped and 48 countersunk by machines No. 4 and 5. Machines No. 6 and 7 drill 27 holes, tap and countersink eight, ream and counterbore one each.

Machine No. 8 is a retooled, Natco two-way setup to ream or line ream 16 holes to close tolerances (using only one way). The second way is available for another multiple spindle drilling head if a part change requires it.

• Easy Changeover—Tooling is so easily installed and removed that the company plans to use the same line for production runs of replacement parts for earlier models. The old slip plates (for locating the spindles) are kept in storage for that purpose.

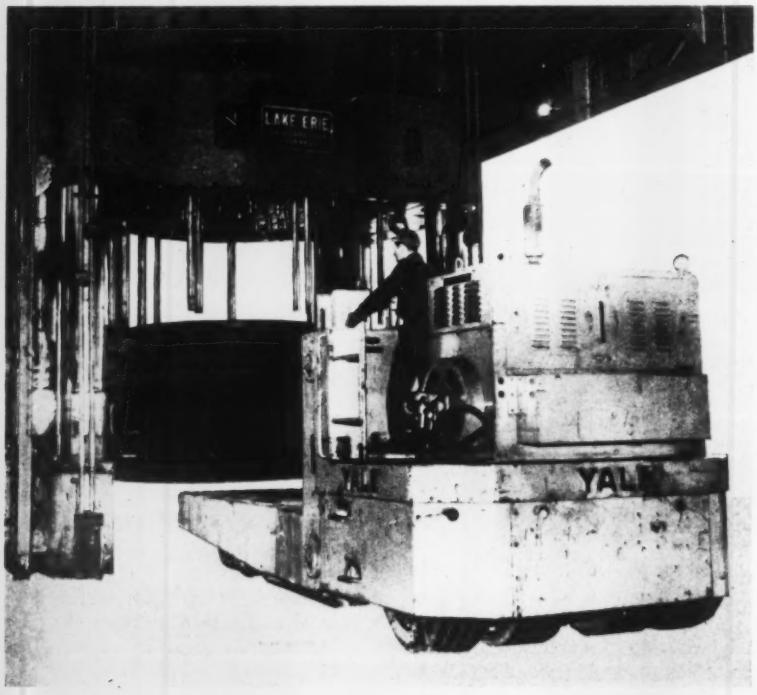
Hefty Handler Cuts Die Change Time

Platform truck carries assembled dies from the storage area straight to the stamping press. Previous handling system was complicated and required more men; dies had to be disassembled before they were moved



Flat-bed lift truck has hydraulic power steering, operating through eight sets of caster type wheels, giving the unit good maneuverability

Die assembly is suspended from the upper platen of the press with wire rope, and the lift truck platform is lowered so the unit can be backed away



YOU CAN make faster tool changes on big machines if you use the right handling methods and equipment.

A giant lift truck and an improved handling system yield a 50 per cent saving in die change time on a 4000 ton press at American Car & Foundry Div., Milton, Pa., ACF Industries Inc.

The truck was supplied by Yale Materials Handling Div., Yale & Towne Mfg. Co., Philadelphia.

• Die changes are made by the five man press crew, with the help of the lift truck operator.

The truck carries up to 200,000 lb on a 104 sq ft platform. It moves the dies, assembled and ready for use, to and from the storage area, 100 yards from the pressroom.

Dies in storage are supported by I-beam stanchions. So, the truck can pick them up without help from a crane.

The truck operator delivers each die from storage to the press bed. Slings from the upper platen of the press hold the die in position while the platform is lowered and the carrier is backed away. The die is then lowered to the bed and bolted in place by the press crew.

Dies as large as 142,000 lb are changed in 3 to 4 hours vs. 6 or 7 previously. Similar time savings are realized in changing smaller dies.

• Previously, dies had to be disassembled. More men were required. The handling system was complicated.

Die parts were picked up in one of two storage areas by a locomotive crane and loaded on a flatcar. Three men were needed to load and unload the crane.

A switch engine, carrying a three man crew, moved the car to a siding outside the pressroom. A bridge crane, manned by an operator and two helpers, unloaded parts from the car.

The crane and press crews then moved parts to their positions on the press with a flatbed track car.

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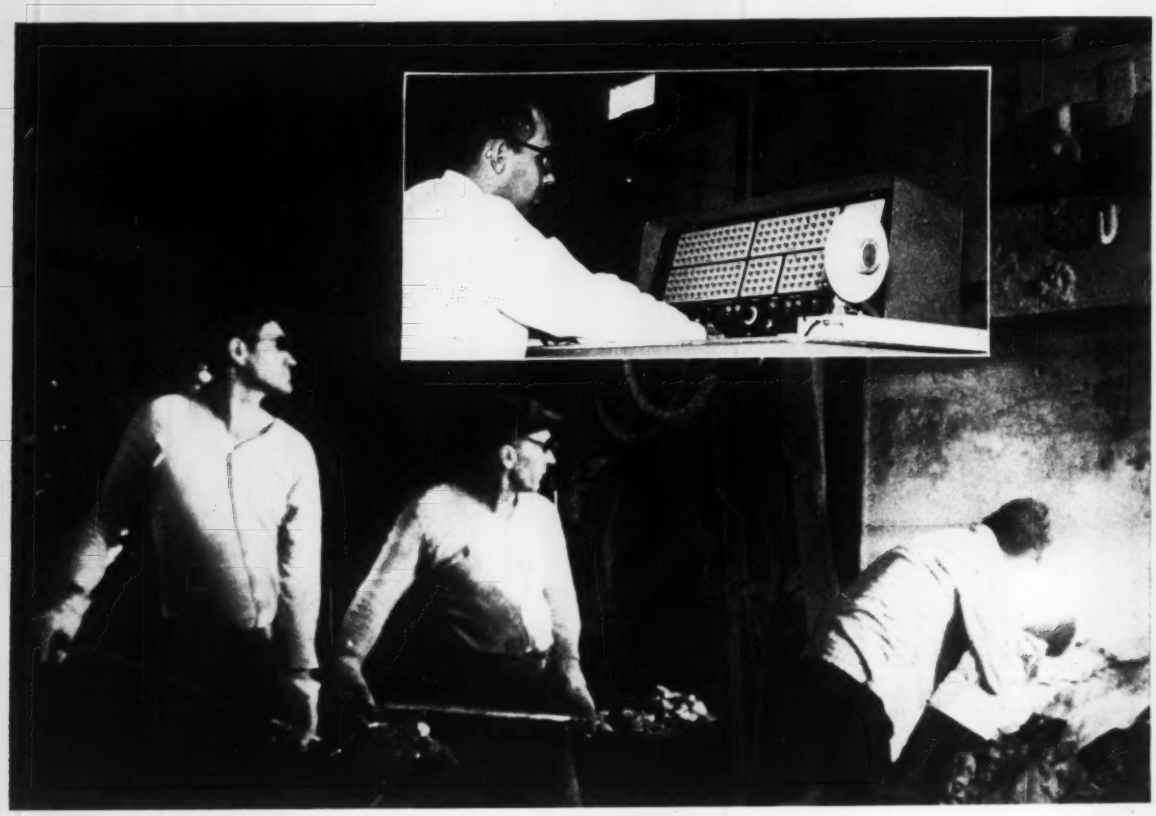
MACHINE TOOLS

Computers May Cut Cost of Alloy Steel



By giving more specific information on material prices and technology, they should help steelmen determine the right combination of materials and methods for making quality steel at the lowest possible cost. Digital equipment has been used in the Metals Research Laboratories at Union Carbide Metals Co. to study electric furnace practice in making stainless steel

PRODUCERS of alloy steel are expected to use digital computers as they look for ways to improve their product and push down production costs. The computers will provide immediate and long range benefits by determining the right materials and procedures for efficient steelmaking.

Material and method studies have been conducted at the Metals Research Laboratories, Union Carbide Metals Co., Niagara Falls, N. Y., a division of Union Carbide Corp. They've been limited to electric furnace production of stainless steel, but the techniques can be used in studying other types of equipment and a broad range of materials, says D. C. Hilty, manager, operations research.

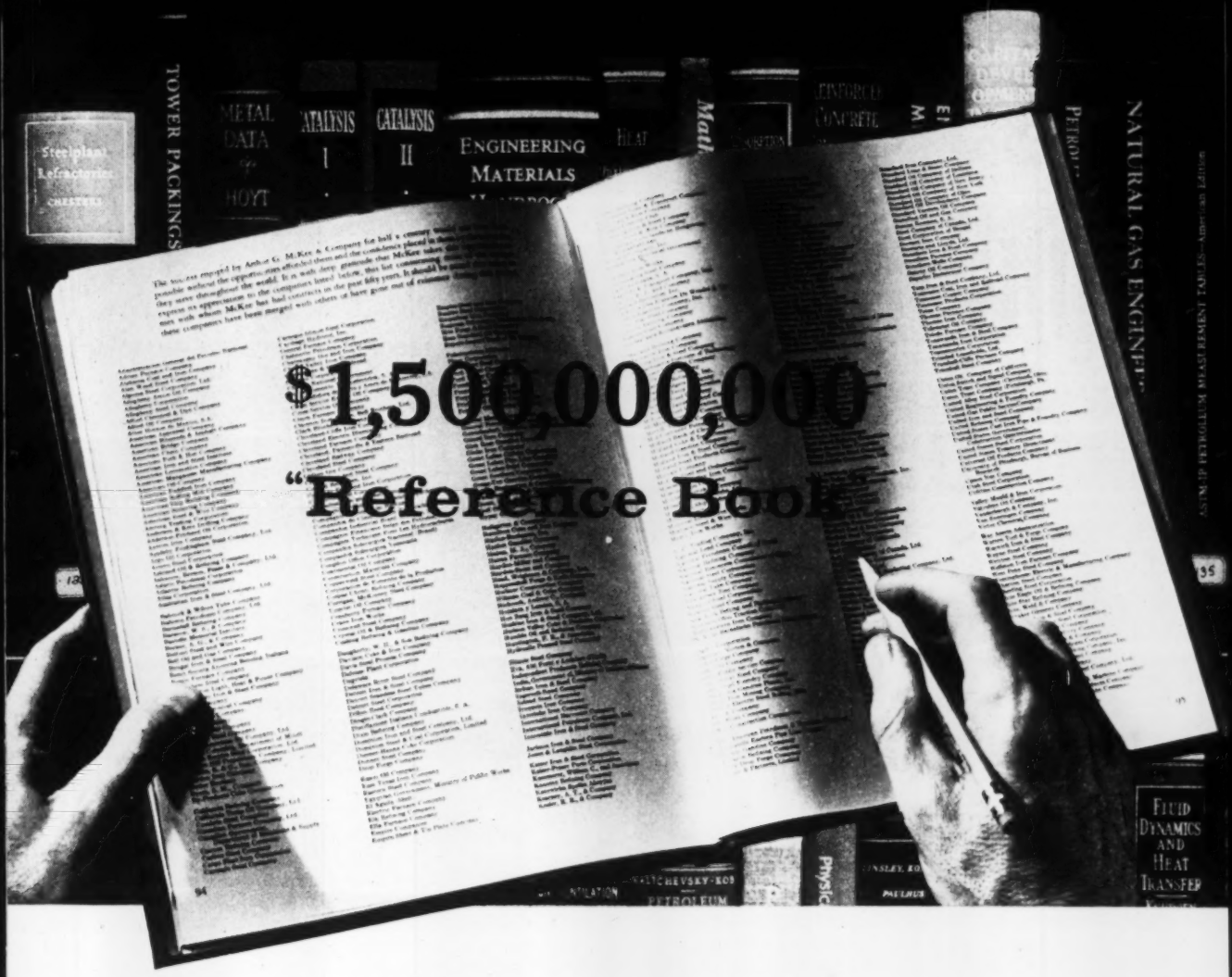
• Studies show the general effect of materials and melting practices on the cost of stainless steel.

More than 30 sources of iron, chromium, and silicon were studied, as well as the cost of oxygen and lime, in making AISI Type 430 stainless steel. Also investigated: The economic effect of such variables as bath temperature before and after oxygen lancing, oxygen blowing rate, slag basicity, and the proportion of the bath melted down when oxygen injection was begun.

Linear programing with digital computers can be modified to handle variables in a specific practice or shop. Examples: Furnace time, refractory consumption, power demand, and availability of materials.

• The computing equipment can determine the right proportions of mixed alloy additions.

When the bath was assumed to



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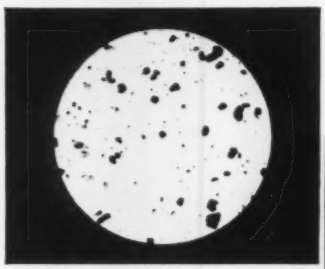
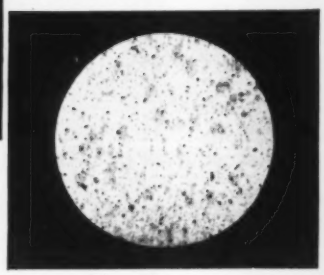


Shown here is a dramatic comparison of particle sizes. Both Acheson's new dispersion, 'dag' 208, (below) and the finest commercially available molybdenum disulfide powder (at left), have been magnified 300 times.



Tests prove that the predominantly finer particles in 'dag' 208 (at right) provide 80% greater hiding power . . . more coverage per dollar.

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be 75 per cent melted at the start of oxygen injection (instead of 100), the computer indicated that a blend of regular charge chrome and refined chrome was the most economical alloy addition in the charge. Higher silicon and carbon content of regular charge chrome provided some of the heat required to complete the meltdown. The computer indicated preference for a blend of the two alloys with a carbon, silicon, and chromium content that satisfied chemical and thermal requirements. The melter could modify such a blend, if necessary, to eliminate duplications in stocking.

• The effects of oxygen lancing, slag basicity, and slag volume were studied.

Costs were reduced substantially by higher temperatures at the end of the oxygen blow; that's because more low cost stainless scrap or refined chrome can be put in the charge to supply chromium. Savings must be weighed against possible increases in refractory wear.

Low bath temperature just before oxygen injection brought modest savings by permitting more low cost chromium to be used in the charge. Increases in blowing rates cut costs by reducing the amount of chromium oxidized.

A serious reduction in slag basicity increases production costs slightly, by causing a higher chromium loss in the slag.

Slag volume also bears some watching. Increased slag volume usually means lower chromium recovery. But the computer verified the opinion of many steelmen: Low slag volume and high chromium recovery don't always indicate the most economical steelmaking methods.

• Increasing use of gaseous oxygen for decarburization permits more chromium bearing scrap and high carbon chromium alloys to be used in charging the stainless steel heat.

Less low carbon chromium is needed during slag reduction and finishing; ferroalloy producers have developed high carbon chromium alloys that cost less.

The search for a low cost alloy with the carbon and silicon content wanted by most melters has spurred the development of refined chrome.

• Economic trends have changed the form of alloy additions used throughout the steel industry.

Example: Formerly, ferrochrome-silicon was added to stainless steel heats after decarburization to reduce slag and build up chromium content. Electrolytic manganese was used to meet the manganese requirements.

Recently, many melters have used ferromanganese-silicon for slag reduction or to increase manganese content. Low carbon ferrochrome has been substituted to increase chromium. Result: Savings of $8 to $10 a ton on high manganese steels. The practice also offers savings on 300 and 400 series steels.

Low carbon silicomanganese (an alloy similar to the ferromanganese silicon used in open hearths) saves up to $1.35 a ton as a manganese source for high silicon electrical and low alloy structural steels.

Another trend: Replacement of loose alloys with bagged materials, such as ferrosilicon, ferromanganese, silicomanganese, ferrovanadium, calcium-silicon, ferrocolumbium, and 12 to 15 per cent zirconium alloys. Steelmakers find that bags containing exact weights of alloying elements offer savings greater than their packaging costs.

TITANIUM IN A J-57 engine needs a lot of high purity argon to keep out atmospheric contaminants during welding. Plastic window operator is welding through forms part of fixturing and improves visibility. Ford Motor Co., Dearborn, Mich., saved $180,000 on this job by switching to liquid argon, says the Linde Co., a division of Union Carbide Corp., New York, which also supplies the storage and distribution facilities

Right Machine Fixtures Pay off Three Ways

THE SELECTION of automated fixtures with the right vertical honing machine brought threefold advantages to a French automobile maker, says Barnes Drill Co., Rockford, Ill.

1. The unit is doing work that formerly required three honing machines. 2. Manual loading and unloading are eliminated. 3. An operator's attention is required only when a honing stone change is indicated by a control panel.

• Honing—The automated process is part of a cylinder sleeve production line. Cast iron parts are honed at a rate of 144 parts per hour at 80 per cent efficiency. The amount of stock removal ranges from 0.002 to 0.004 in.

• Machine Specifications—The unit (Barnesdril No. 307-2) has twin cylinder hydraulic reciprocation and controls for infinitely variable reciprocation rates of 10 to 75 fpm. The electronic hone expansion has an automatically controlled rapid expansion and collapse, electronically measured and infinitely adjustable hone feed, automatic compensation for stone wear, and individual feed for each spindle. Plugmatic sizing control units allow independent spindle honing action until bore size is reached.

The fixture assembly controls are electrically interlocked with machine controls to cut operator functions and to minimize cycle time. Accidental misplacement of parts or interruption of supply will cause an immediate machine shutdown.

A two position, rotary index table 18 in. in diameter is mounted on a nonadjustable fixture table. The fixture table also supports two clamping mechanisms and the transfer carriage assembly.

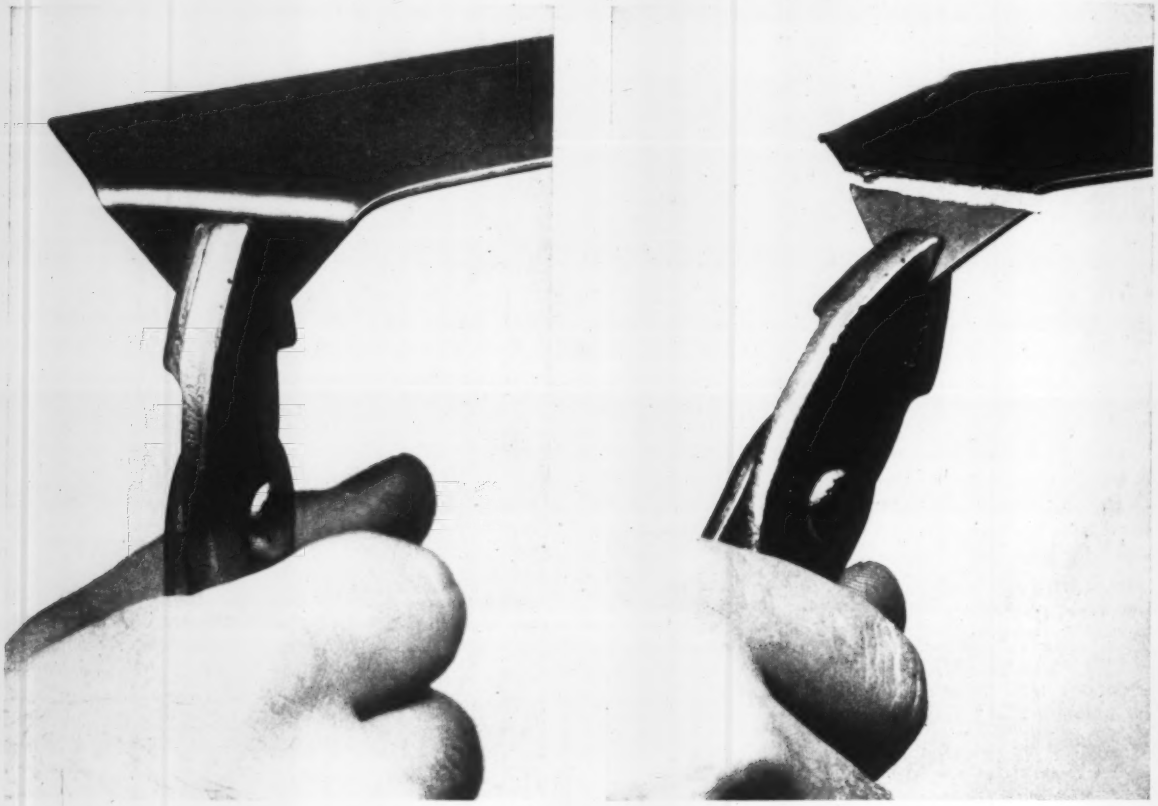
The index table rotates through 180 degrees and is equipped with four fixture subassemblies with full floating compensating adapters. Limit switches control table positioning.

Two clamping brackets on vertical slides are cylinder actuated through lever systems to hold the thin walled part rigidly in position without distortion.

New Molybdenum Sheet Much More Ductile

HD can be bent 90 to 180 degrees at room temperature

Ordinary sheet bends about 20 degrees before breaking



The material can cut the need for heating prior to processing. It's ideal for punching, deep drawing, and for Hydroforming methods in which heat can't be used

PURE MOLYBDENUM sheets with greater ductility than any now on the market have been developed, says General Electric Co.'s Lamp Metals & Components Dept., Cleveland. Commercial quantities are available.

The new type (called HD) shows as much as five times the room temperature ductility of ordinary molybdenum sheets when tested by the Erickson cup method. Importance: This could reduce the need for high temperature forming. A 0.10 in. thick sample was used.

• **Bends Better**—In thicknesses at which ordinary sheets will bend only about 20 degrees at room temperature before breaking or cracking, HD molybdenum will bend 90 to 180 degrees without failure.

• **More Advantages**—The material also has less tendency to delaminate on punching, stamping, and shearing.

GE's Robert F. Johnson (general manager, Lamp Metals & Components Dept.) says benefits are of particular significance in thicknesses of 0.025 to 0.125 in. Some molybdenum forming techniques require temperatures as high as 1000° F. If the new material is used, it can be bent at right angles or double upon itself at room temperature.

This makes it ideal for punching and deep drawing operations and will open the door to many new uses. Example: It may make possible the forming of thick sections of sheets by Hydroforming techniques in which heat cannot usually be used.

Unusual properties make it a key material in many defense and industrial applications, notably electronic tubes, transistor diodes and rectifiers, light sources, and high temperature strength parts.

• **Properties**—It has a high melting point (4752° F), low vapor pressure, and excellent mechanical strength at elevated temperatures. At ordinary temperatures, molybdenum has 1.5 times the tensile strength of steel. High strength is retained up to about 2000° F.

A Cherry-Burrell milk-cooling tank with heat exchanger welded to the bottom.

Radiograph showing welding had flashed, leaving splattered metal spurs.

The tank had to be "Tops" —*Radiography pointed a way*

Milk handling and storage equipment has the most rigid health and sanitary requirements. The high quality and safety of milk must be protected. So, when this Cherry-Burrell farm milk cooling tank was developed, every precaution was taken to strive for perfection.

For example, the tube heat-exchanger welded on the bottom was radiographed to check for soundness. Early radiographs showed several places where the welding had splattered and formed spurs inside the tubing. This could have caused difficulties. So, the welding technique was altered and later radiographs proved the trouble removed.

Radiography is a great protector of quality. It can assure the welder and the foundryman that only good work leaves his shop. It saves time and money—helps build business. If you would like to know how it can help you, get in touch with your x-ray dealer or Kodak technical representative and talk it over.

X-ray Division . . . EASTMAN KODAK COMPANY . . . Rochester 4, N.Y.

Read what Kodak Industrial X-ray Film, Type AA, does for you:

- Speeds up radiographic examinations.
- Gives high subject contrast, increased detail and easy readability at all energy ranges.
- Provides excellent uniformity.
- Reduces the possibility of pressure desensitization under shop conditions.

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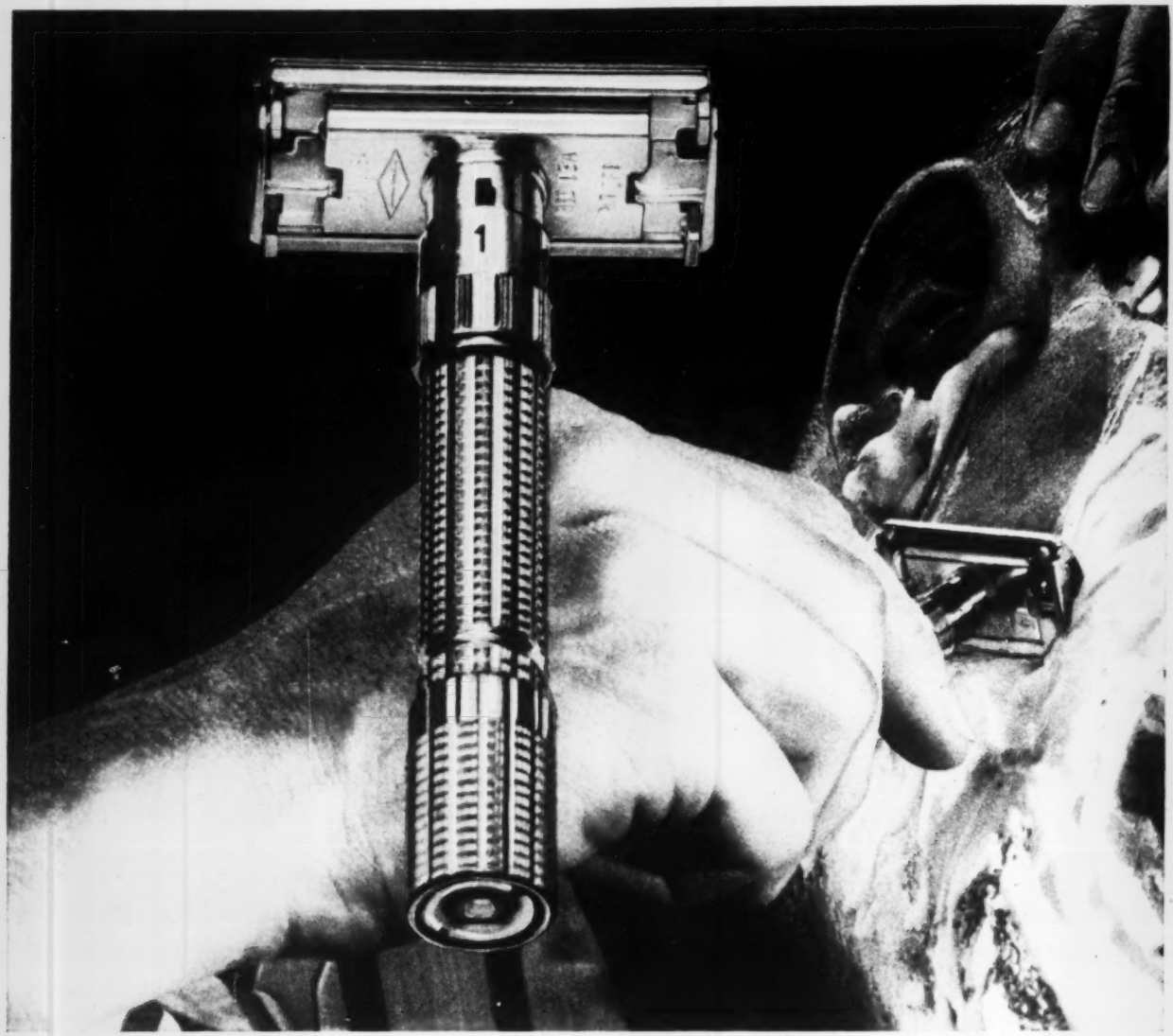
TRADE MARK



PARTS FOR THE "RAZOR

Chase Brass used for components of Newest Gillette Razor!

Faces differ. So do skins—and beards. The new Gillette Adjustable Razor featuring a micrometer dial that can be set to nine different degrees of edge exposure and angle provides the greatest shaving comfort ever, no matter what the combination of skin and beard.

Making a razor as fine as this one calls for manufacturing tolerances held to thousandths of an inch on many small parts. This is why they are milled, stamped, cut or formed from brass.

Chase makes a wide range of copper alloys—each "product developed" to do a specific job and do it better. You can have the help of Chase metallurgists on your production problems. Plus the advantages of copper, brass and bronze in sheet, strip, tube, rod, wire and forgings. See your nearest Chase representative, or write Chase at Waterbury 20, Conn.

THE NATION'S HEADQUARTERS FOR ALUMINUM • BRASS • BRONZE • COPPER • STAINLESS STEEL AND FORGINGS

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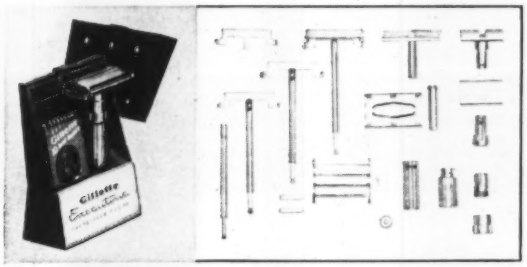
THAT FITS EVERY FACE"



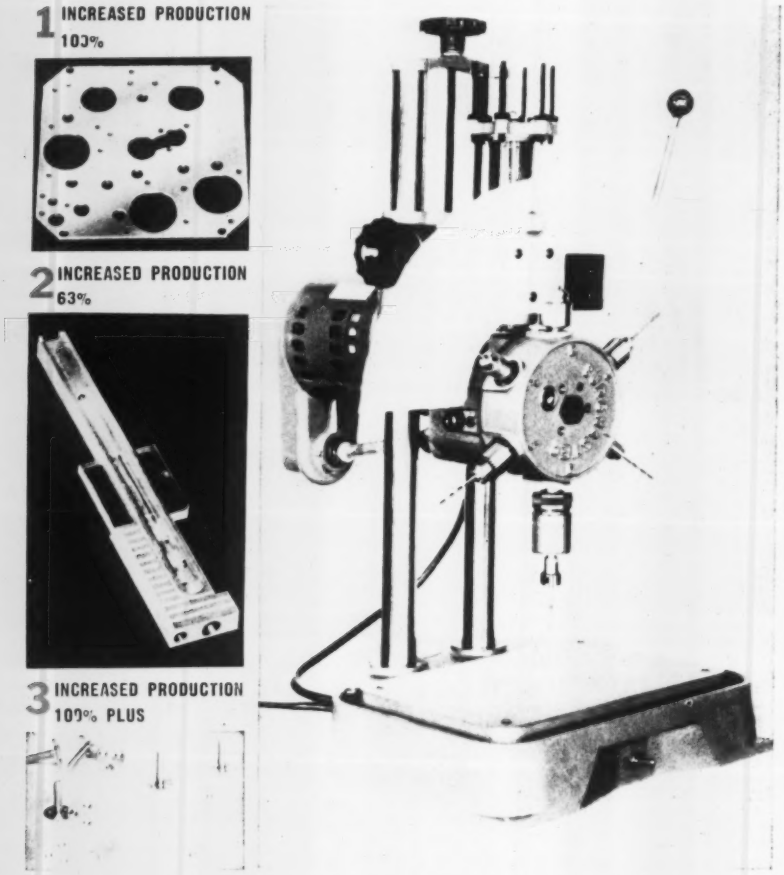
Many parts for the new Gillette Adjustable Razor are made from brass and copper alloys produced to closest tolerances by Chase.

Chase
BRASS & COPPER CO. WATERBURY 20, CONN.
Subsidiary of *Kennecott Copper Corporation*

Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

Turret Drills Step Up Production, Save Space

Here are three cases where the machines decreased drilling time and eliminated shifting of fixtures from one drill to another. In each case, tight tolerances were held



ONE WAY to reduce the cost of producing a part is to reduce motions in machining.

When the part must be drilled, reamed, tapped, counterbored, or countersunk, nonproductive motions can be minimized with a turret drill. With the indexing turret, one employee can perform several machining operations at one location.

1 A fabricator of missile parts has doubled production on a control part with three Burgmaster turret drills.

The job requires that 43 holes be drilled and reamed (86 operations) in a gearbox end plate to plus 0.0002, minus 0.0000 in. centers, and plus or minus 0.0001 in. diameters. The end plate holds alignment of gears to a maximum permissible backlash of 0.0001 in.

High production of the 43 holes of seven sizes from 0.0785 to 0.8125 in. in 0.081 in. thick brass (it's done in 8 minutes) is made possible by power indexing of the six spindle turret.

2 A producer of electronic equipment upped production 63 per cent in drilling a brass galvanometer body.

Six holes in the part range from 0.029 to 0.113 in. in diameter. They are held to plus or minus 0.0005 in. in a jig.

The work was formerly done on five, single spindle drill presses which cost about $1625 vs. the $600 for the Burgmaster machine completely tooled.

3 A manufacturer more than doubled production and eliminated a $150 drill jig in machining a special stud.

The job: Center drill, drill, and countersink a Ni-Silver and gold plated aluminum stud with 120 degree hole separations at the rate of 60 studs an hour.

The parts are held in a hand indexed, standard Hardinge Collet index fixture. All three operations are done at one setting, holding tolerances to plus 0.003, minus 0.001 in.

Preselective, automatically shifted speeds for each spindle and sensitive hand feeding result in fine finish, accuracy, and long tool life.

Floor space requirements have been reduced 66 per cent, and it is estimated that during the machining of a 550 part lot, 2½ miles of fixture shifting have been eliminated.

• An electronic plant estimates that a six spindle turret drill saves the operator 640 miles of walking a year.

It occupies only one-third of the space required by a comparable line of six, single spindle installations. It often doubles production because the operator remains in one position through six machining operations rather than being required to shuttle the work down a line of six separate machines.

The turret drills are made by Burgmaster Corp., Gardena, Calif.

Backup Bar Speeds Weld Production

In use at a missile ballistic shell plant, it's made of aluminum and has a stainless insert that costs half as much to replace as the repair of all-stainless bars

A NEW TYPE backup bar for inert gas arcwelding of aluminum is cutting costs and speeding production at Reynolds Metals Co., Sheffield, Ala.

The bar is a machinable aluminum alloy with a replaceable, T-shaped, stainless steel insert. Previously, backup bars used at the plant were all stainless steel.

• **Benefits** — Charles M. Jenkins, production superintendent at the missile ballistic shell plant, cites two major advantages of the bar over conventional, all-stainless types.

1. It dissipates welding heat more quickly than a stainless bar, making unnecessary the water jackets used on some production stake welders. Also, faster heat dissipation keeps weldment distortion to a minimum.

2. The stainless steel inserts are cheap enough to be discarded after their grooves become burned and pitted.

• **Cheaper** — M. C. Duke, plant manager, says the inserts can be replaced for less than half the average cost of repairing all-stainless bars.

There's also a saving in downtime in the welding department. Production is speeded because inserts of different groove sizes for different sheet thicknesses can be put in much more quickly than was the case when the entire backup bar had to be switched.

The Reynolds missile plant has been using the new bars for more than a year. It has not been necessary to replace any of the aluminum bars which hold the stainless inserts.

The bars and inserts can be produced by extrusion or machining, say plant officials.

Only one welding standard—perfect — is maintained at the plant which produces aluminum ballistic shells for the Army Redstone missile under a contract with the Chrysler Corp. and Jupiter-C shells and spin-launchers for the Army. Every inch of welding is x-rayed.

New Kidde carbon dioxide portables awarded highest U.L. rating!

Belleville, N. J. June 1—A spokesman for Walter Kidde & Company announced here today that six of the company's new portable fire extinguishers have been awarded the Underwriters' Laboratories highest ratings for their respective capacities. To those interested in fire safety, this means that, pound for pound, these new Kidde units have more fire-killing power than any other carbon dioxide extinguishers on the market today.

Available in 10, 15 and 20 pound capacities, in either squeeze valve or trigger models, these power-packed Kidde units feature new hose and discharge horn assemblies, which are responsible for their extra fire fighting ability. This hose-horn combination is also being offered as a replacement unit for existing 10, 15 and 20 pound carbon dioxide units, and when attached will upgrade their effectiveness equal to the new ratings.

For more information on these top-rated Kidde carbon dioxide portables write Kidde today.

Kidde

Walter Kidde & Company, Inc.
860 Main St., Belleville 9, N. J.
Walter Kidde & Company of Canada Ltd.
Montreal—Toronto—Vancouver

Lead Filled Teflon Bearings Tough, Don't Need Grease

• A PORTABLE lift manufacturer faced the problem of providing bearings and lubricants for loads exceeding 20,000 psi.

The lifts use hydraulically operated scissor arms to eliminate center rams, expensive underground installations, and extensive compressed air facilities. Frequent lubrication of bearing surfaces was mandatory to prevent excessive wear or bearing breakdown.

Many materials and surfacing processes were tried in an effort to find a material that would not fail if poorly maintained.

• After two years of testing, a dry bearing material (called Glacier DU) was chosen. A lead filled, Teflon type, it is now used in 28 vital bearing locations and has eliminated grease fittings and grooves.

In testing the material, a 1½ in. diameter bushing (1 in. long) on an axle was loaded to 22,500 psi bearing pressure. A torque wrench twisted the axle in the bushing to read turning point friction. Rotation began at 460 in.-lb and only 360 were required to keep it turning.

Next, a platform lift unit was equipped with a set of bushings and loaded for endurance tests. The lift cycled 7500 times up and down (through full travel) under a 10 per cent overload and alternately in dusty air and water soaking. (This represents about three years' service.) The bushings showed about 0.002 in. of wear. Axle wear was scarcely 0.0003 in.

The reduced friction lowered the hydraulic pressure necessary to raise the load from 2200 to 1900 psi. No bearing failures have occurred since installation.

• The material has steel backing with a thin sintered porous bronze overlay.

The overlay is impregnated and thinly covered with a lead powder filled TFE fluorocarbon resin (Teflon). The bearing material can withstand temperatures from −328 to 536° F. United States Gasket Co., Camden, N. J., supplied the material.

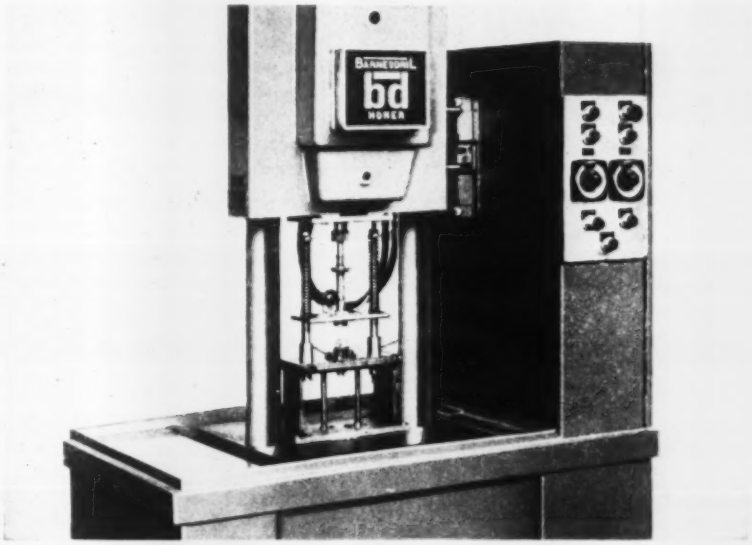
Honer Finishes Small Bores at Production Rates

AUTOMATIC or manual honing of bores from ¼ to 1½ in. in diameter can be done on the Barnes Model 10 honing machine.

Rotation and reciprocation are powered by mechanical connections that require a minimum of upkeep. Pneumatic controls are used for hone feed, including automatic expansion and collapse, and for automatic compensation for stone wear. The absence of hydraulic circuitry keeps floor space and maintenance costs at a minimum.

The machine illustrated has tooling for honing bearing rod ends and inner races with inner diameters from 0.4995 to 1.005 in., and stock removal of 0.006 to 0.008 in. At 80 per cent efficiency, production is 131 pieces an hour. Automatic sizing by a Plugmatic gage maintains size consistency within 0.0002 in. from bore to bore.

The Model 10 machine is available with an air operated, six-station, rotary indexing fixture which can be furnished with such automatic equipment as magazine loading, ejection, pregaging, postgaging, and automatic shutoff.



For more information, *write* Barnes Drill Co., 854 Chestnut St., Rockford, Ill.

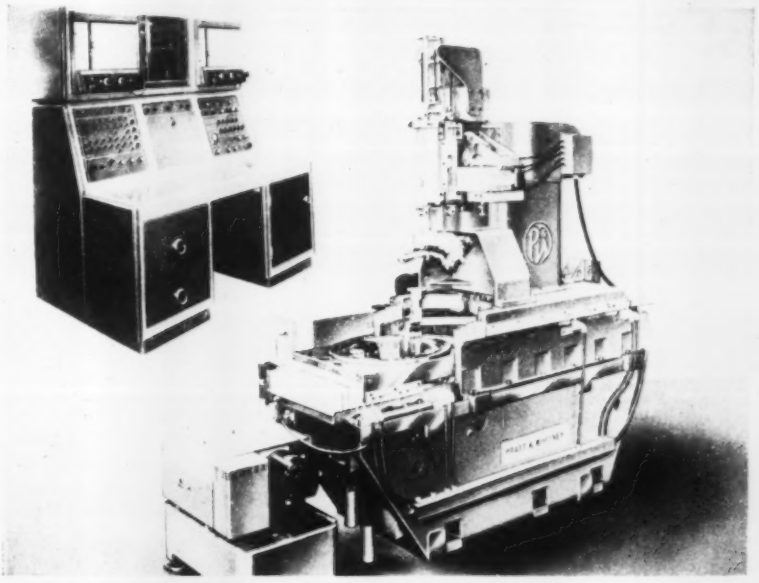
Tape Controlled Gager Needs No Special Tooling

THIS numerically controlled gaging machine can check parts of practically any shape at any number of co-ordinate points on inner or outer surfaces.

The builder states that complex missile shapes can be checked quickly and accurately even though hundreds of individual reference points may be involved.

Known as the Data-Limit 6 Co-ordinate Measuring Machine, the instrument has two gaging arms, each of which is capable of movement in the X, Z, and Theta co-ordinates, horizontal and vertical movement, and rotary movement around the X and Z co-ordinates.

Input data carried on perforated tape is used to move the gaging arm and head to a reference point on the workpiece, and then to position the gage at a series of points



in space. At each point, the gage head measures the deviation of the workpiece surface from its nominal location.

The use of perforated tape eliminates the time and expense of preparing templates and other special gage tooling. Result: Part-to-part changeover is fast, simple and economical; engineering changes can be made without creating production bottlenecks.

For more information, *write* Pratt & Whitney Co. Inc., West Hartford 1, Conn.

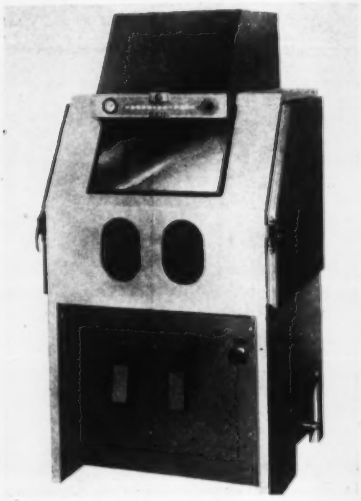
Glass-Jet Peening Ups Fatigue Life of Metals

DELICATE parts can be peened without altering critical dimensions in the Model A-50 glass-jet peening machine.

It also can remove hinged and feather burrs.

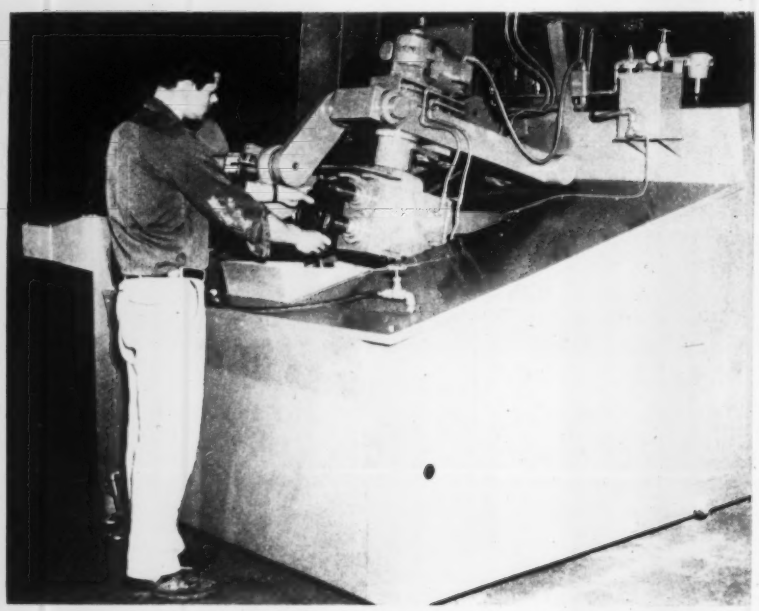
The unit uses specially treated, minute, pure glass beads in a slurry solution for peening, cleaning, and finishing surfaces.

The process not only increases strength and fatigue life of metals, but can improve finishes down to 4 microinches. There is no imbedment or contamination of material surfaces.



The Model A-50 is operated by a knee lever. Holes in doors on each side of the working chamber permit peening long or bulky pieces. The builder will design special fixtures for semiautomatic operation and can also adapt the machine for automated setups.

For more information, *write* Perfecto-Peen Div., Aero-Test Equipment Co., P.O. Box 10627, Dallas 7, Tex.



Unit Deburrs Parts at High Speeds

WITH the new Mechamatic MM-1-2-High Speed Dual Spindle Unit, you can deburr and finish many different parts in low production or a single part in high production.

The parts are mounted on air operated spindle fixtures which are submerged.

They rotate in a fluid abrasive mass which simulates a form fitting grinding wheel. Travel rate: About 2000 sfpm.

With a 15 second time cycle, the machine will produce 240 pieces an hour per spindle, at 100 per cent efficiency. It can take up to 8¼ in. diameter parts.

The Mechamatic process is completely automatic and controlled except for loading and unloading the parts, for which no special skill is required.

For more information, *write* Mecha-Finish Corp., Sturgis, Mich.

Semiautomatic Welder Does Field Hardfacing

DIPPER teeth, crusher rolls, and many other parts can be hardfaced in the shop or in the field with the Amsco portable, semiautomatic welder.

Connected to any 300 ampere or higher direct current power source,

Predictable Performance

. . . for Greer Steel Company is assured with a

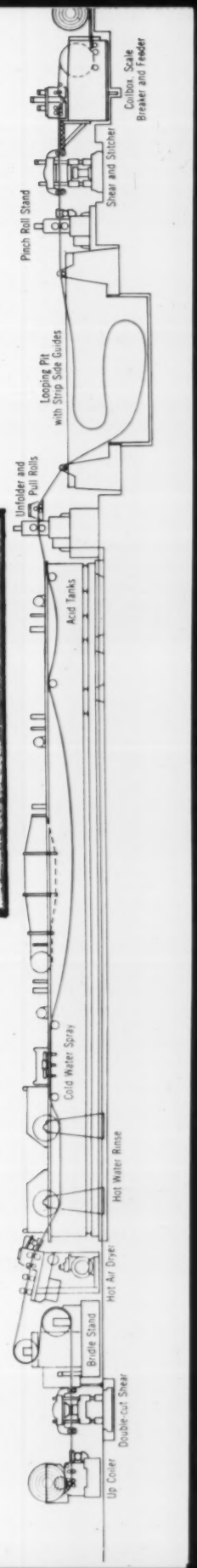
SECO

Pickling Line Installation!

Custom built to meet specific requirements, The Greer Steel Company of Dover, Ohio is experiencing "predictable performance" with their SECO continuous Pickling Line.

Designed to accomodate gauges ranging in thickness from .060 to .1875, coil weight of 10,000 lbs., and a maximum width of 30". Line speed at entry end, 25 to 400 FPM; at exit end, 25 to 200 FPM.

SECO's staff of trained engineers are available for personal assistance. Call us today.



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- Narrow Strip Grinding Machines
- Slitting Lines
- Multiple Strand Pull-out Rolls and Take-up Frames
- Strip Coilers (Up and Down Type)
- Traverse Reels for Narrow Strip
- Steel Coil Up-enders
- Scrap Balers

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H&K PERFORATED MATERIALS

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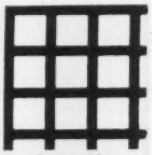
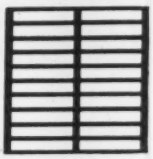
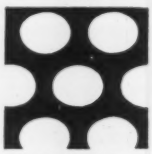

Square holes


Slots


Oval holes

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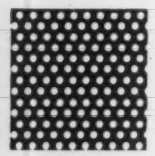
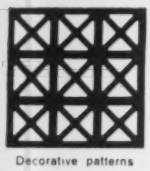
H & K facilities enable the perforating of all metals, wood, plastics and cloth fabrics. Perforated materials can be furnished in sheets, coils, rolls or plates. Fabricating services include shearing, rolling, welding and forming.

Perforated metal can be ordered with special finishes: aluminum—color anodized or brushed and lacquer finish; steel—painted, chrome plated, enameled, japanned or other baked-on finish. Decorative patterns can be embossed if requested.

Many patterns in steel sheets (industrial or decorative) are in stock at our warehouses. Send for H & K Stock List Brochure.


Round holes

Oblong holes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NEW PRODUCTS and equipment

the welder feeds hardfacing wire through a hand held electrode holder when the holder switch is depressed. The holder switch also gives remote inching control as required.

The machine is easy to move around because of its "golf cart" construction and large wheels. It is completely enclosed to avoid shock hazards and to protect the reel of wire.

For more information, *write* Dept. A, American Manganese Steel Div., American Brake Shoe Co., 389 E. 14th St., Chicago Heights, Ill.

Hydraulic Oil Stands Heat

HERE is a hydraulic fluid that can stand pressures up to 2000 psi and operating temperatures up to 150° F.

Called Sunsafe, the water-in-oil emulsion type fluid has a high viscosity index (130) with good film strength at high temperatures, good thermal stability even when subjected to operating temperatures of 150° F for prolonged periods, and good antiwear and antirust characteristics.

The fluid provides good lubrication with dependable fire protection, reducing the hazards of fire to both personnel and equipment. It reduces maintenance, repairs, and downtime because of its antiwear and antirust-or-corrosion properties.

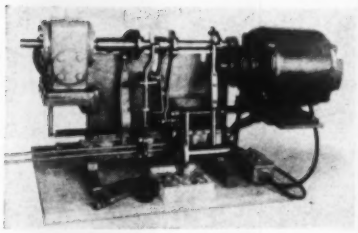
For more information, *write* Sun Oil Co., 1608 Walnut St., Philadelphia 3, Pa.

Tube Cutter Produces 12,000 Pieces an Hour

PRODUCTION rates up to 12,000 pieces an hour can be obtained with this automatic cutoff machine for small diameter, round tubing.

Designed for volume users of aluminum, copper, brass (or other copper alloy) tubing up to 7/16 in. OD, the machine provides precision cutting within ±0.005 in. for cutoff lengths up to 2 in.

Without stopping the machine, an operator can start fresh lengths of tubing, as required, maintaining high net production rates. He can



service two or three machines. He can set up individual jobs in 15 minutes, obtaining significant savings in time even on relatively small, irregularly scheduled production runs.

For more information, *write* H & H Machine Co. Inc., Noble and Jackson Streets, Norristown, Pa.

Variable Speed Control Boosts Fork Truck Utility

SMOOTH travel plus infinitely variable speeds are possible with the control system introduced for electric powered fork trucks by Elwell-Parker Electric Co.

The Acro-Smooth carbon pile speed control also reduces maintenance by eliminating speed contactors, complicated master switches, and resistance boxes. It provides accurate inching coupled with fast acceleration. Full power is attained at slow speeds for safe starting on ramps.

The line of trucks which incorporates the speed control, known as the F-50 T, includes 4000, 5000, and 6000 lb capacity models.

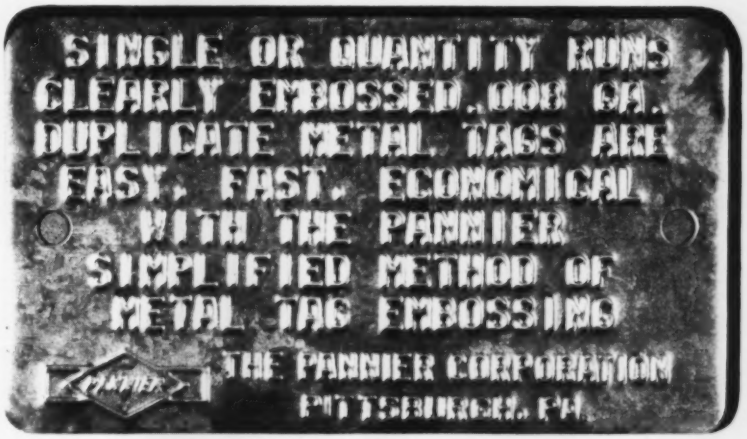
For more information, *write* Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland, Ohio.

Instrument Identifies Metal Alloys, Properties

MIXED LOTS of metal parts can be quickly sorted with the Heatcheck. The instrument can also be used to quickly test ferrous and nonferrous parts for such properties as heat treat condition, relative hardness and strength, chemical purity, and presence of decarburization.

Measurements are made on any flat surface $\frac{5}{8}$ in. in diameter or larger, even when the surface is rough, dirty, or covered with layers of paint. The measurements are

CUT YOUR METAL TAG COSTS...



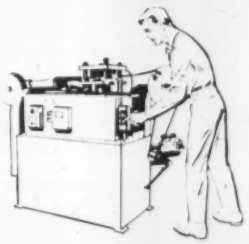
. . . Get clearer, sharper impressions, with PANNIER EMBOSSING MACHINES

Whether you use embossed metal tags in large, production quantities — or just a few, occasional tags — Pannier simplified embossing equipment is engineered to provide your metal tags at the lowest possible cost, greatest safety and easiest readability. Inexperienced help can operate any of the machines, large or small.

One to four tags at a time (model 344)

Model 344 Pannier Embossing Machine has two uses. It can emboss up to 4 duplicate tags, like that pictured above, in sizes up to 3" x 5½" or longer, at one operation (one letter at a time).

This same machine provides the low cost, matched male and female embossing matrices (shown at left) for use with Model 207. Paired, these two machines provide complete equipment for volume tag production.



Volume Tag Production (No. 207)

The Pannier Master Marker Embossing Machine, Model No. 207-H-6 automatically produces up to 60 duplicate tags per minute, employing coils of Pannier Safety Tag stock. These tags, in strip form, are nicked and notched for easy detachment from the coiled strip. Embossing impression is made by inexpensive male and female metal matrices—that cost only a fraction of type-and-matrix methods. The machine operates by start-stop pushbutton control. Fingers never approach the embossing area.

For single, occasional tags

Pannier engineering provides a wide range of Master Marker Embossing Machines to suit any quantity requirement. This small hand-held Embosser makes individual tags on half-inch strip metals or vinyl plastic.

Pannier Embossed Tags

You can order all your tag requirements from Pannier. They're embossed for you on these same machines. Tags are low cost and delivery service is fast. They can be made to your specifications, or write for standards and price list.

Write for literature or Pannier engineering service, specifying style and quantity of tags you require.

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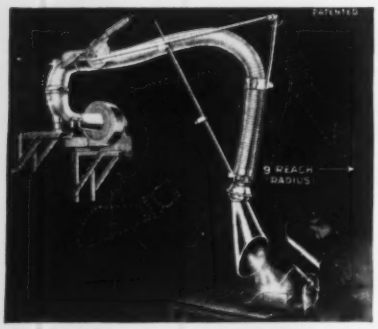
Remove Welding Fumes at the Source... with RUEMELIN FUME COLLECTOR



Welding shops equipped with Ruemelin Fume Collectors are assured of a clean shop atmosphere. Noxious fumes, heat and smoke are eliminated AT THEIR SOURCE. Improves working conditions . . . lessens fatigue . . . paves the way for increased plant production. Especially helpful in winter months when windows and doors are closed.

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NEW PRODUCTS and equipment

made in about 3 seconds by touching a hand probe to the surface tested. The probe's electromagnetic field excites eddy currents in the test part. Instrument response to conductivity and permeability is displayed on a meter, and by two alarm lights. The lights signal conditions above and below preset tolerance levels, and speed the sorting of parts.

A variety of plug-in meter scales is available for different metals and conductivity ranges. The only adjustment left to the operator is calibration. The unit is highly sensitive; hardness differences of a few points on the Rockwell scale or slight alloy differences appreciably change the readings.

For more information, *write* Metrol Inc., 17 E. Holly, Pasadena, Calif.

Device Counts Cartons on Conveyor

A SIMPLIFIED counting device, called a Flow Control Register, counts cartons, cases, and boxes as they pass along a conveyor system.

A unique combination of mechanics and electrical circuitry makes it unnecessary to space the individual objects on the line to get accurate counts. This method may be substituted for manual counting or a photoelectric counting device.

Each item is counted as it passes over a roller on the flow control register. This partially depresses trigger fingers which open a circuit to generate an electrical impulse. As the rear edge of the item drops over the roller, a holding coil charges the electric counter. After the item passes over the fingers, the trigger returns to its normal position and the entire circuit is reset for the next count.

The method eliminates double counting. Items can be counted back to back as long as the acceleration from the trigger fingers permits the resetting of each charge for the individual item.

For more information, *write* Rapids-Standards Co. Inc., Rapistan Bldg., Grand Rapids, Mich.

NEW Literature

Write directly to the company for a copy

High-Purity Brazing

A booklet discusses various high-purity brazing alloys for copper, bronze, or brass. It gives specifications and cooling charts on standard alloys for nonferrous brazing, and silver solders for ferrous and nonferrous metals. Alloy Specialties Co., Swissvale, Pa.

Spiral Point Drilling

"The Spiral Point—A New Era in Drilling," describes spiral point geometry for converting standard twist drills into precision tools. Cincinnati Lathe & Tool Co., Cincinnati 9, Ohio.

Sealed Relay Catalog

Bulletin GEA-6628, contains information on hermetically sealed microminiature, subminiature, miniature, and high speed relays for military and general purpose applications. General Electric Co., Schenectady 5, N. Y.

Protective Coatings

"Comparison of Maintenance Coating Systems," is a four page chart which discusses buying and specifying corrosion resistant maintenance protective coatings. Carboline Co., 32 Hanley Industrial Court, Brentwood 17, Mo.

Colored Protective Coatings

A fact sheet on the Kenvert-O-Color process tells how it can be used on various metals, and suggests the use of dyes in combination with a chromate film to obtain wet strength hardness, economy, and uniform finish. Conversion Chemical Corp., Rockville, Conn.

Copper, Brass, Bronze Selector

A folder details properties, specifications, and typical uses of a long list of copper and copper-base alloys. Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.

Air Cleaning in Steel Mills

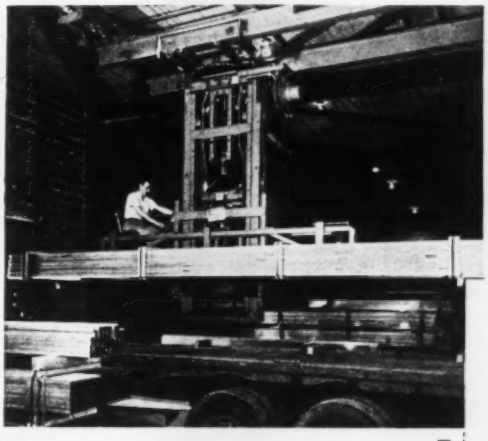
Bulletin 234-P1 discusses the air cleaning requirements in steel mill operations. Dept. PD, American Air Filter Co. Inc., 215 Central Ave., Louisville 8, Ky.

Heat Transfer Tubing

Bulletin TDC-142B furnishes condensed data on the mechanical and physical properties of seamless and welded carbon steel pressure tubing. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Welded Steel Line Pipe

A 40 page booklet describes the manufacture of steel line pipe ranging from ½ in. through 36 in. in diameter. Tubular Sales Dept., Kaiser Steel Corp., P. O. Box 58, Oakland 12, Calif.



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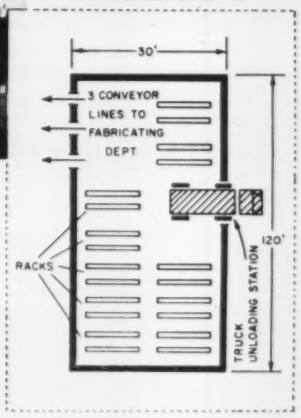

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TRAK-RAK

handle complete warehousing operation

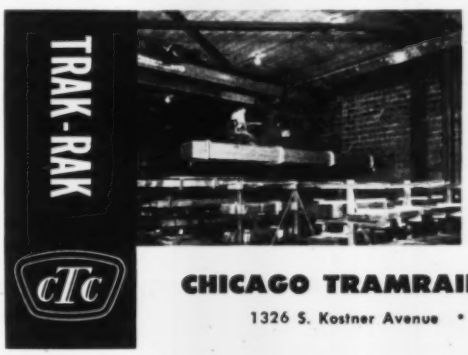
UNLOADS TRUCKS, STORES MATERIAL IN 1 OPERATION

When the Per-Fit Products Corp., Indianapolis manufacturer of aluminum windows installed a Chicago Tramrail TRAK-RAK unit in its warehouse, it gained 4 big advantages:

1. **Increased the capacity of existing storage area.**
2. **Reduced handling costs by permitting 1 man to handle the entire warehouse.**
3. **Kept production lines supplied with on-time material deliveries.**
4. **Handled high grade aluminum extrusions without damage.**

The TRAK-RAK unit installed at Per-Fit consists of a 1 Ton capacity underrunning crane from which is suspended an electrically operated rotating telescoping column which is fitted with a three-fork carriage. All operations of the TRAK-RAK unit are controlled by the operator, who rides with the carriage. The unit serves a series of self-standing racks equipped with arms which receive the bundled material. Because the TRAK-RAK column requires minimum operating space, the aisles between racks are very narrow.

Trucks delivering material are unloaded (top picture) by the unit, which moves over the tops of the racks (below) to the proper rack and deposits its load in 1 operation. When a particular bundle is required by production, the operator moves to the rack, picks up the bundle, and, moving overhead, travels to the conveyor lines (drawing) and sets the bundle down on the designated conveyor line.



TRAK-RAK Systems of vertical storage and handling are saving time and money in warehouses and production plants of all types. *For complete details on how TRAK-RAK can help solve your problems, write:*

CHICAGO TRAMRAIL CORPORATION

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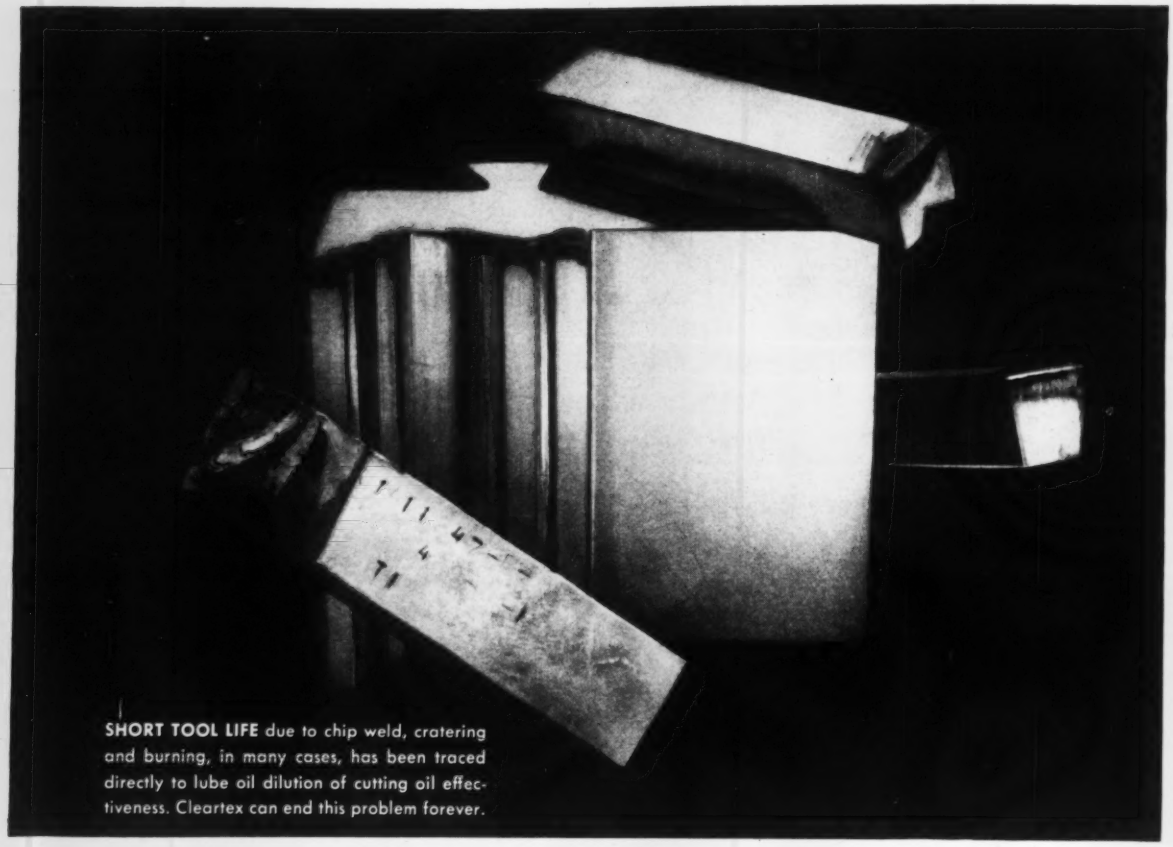

SHORT TOOL LIFE due to chip weld, cratering and burning, in many cases, has been traced directly to lube oil dilution of cutting oil effectiveness. Cleartex can end this problem forever.

Diluted cutting oil shortens tool life drastically

Lubricating oil is probably leaking into the cutting oil sumps of your automatic screw machines as you read this. Current research proves that this is happening in 70% of all the automatics in use today! And where it happens, it shortens tool life by as much as 50%—even 70%. On top of this, the cost of extra regrinds, lost production during tool changes, and excessive scrap production is putting a premium on screw machine operation in too many shops.

Look for these symptoms. One sure sign of dilution is the need for frequent refilling of the lube oil sump. If you are using an ordinary lube oil, this dilution will create two additional—and more costly—symptoms: excessive scrap production and frequent regrinds. Now you can eliminate these forever with the

TEXACO CLEARTEX CURE

The exceptional chemical stability and load-carrying ability of Texaco's Cleartex series make them equally suitable for use as cutting oils, lubricants or hydraulic fluids. All you have to do is use them for both cutting *and* lubrication. With Cleartex in *all* your sumps, you'll find cutting oil dilution will stop and screw machine production cost will drop substantially.

Write today for your copy of Texaco's helpful new booklet "Cleartex in Automatic Screw Machines"...and contact your local Texaco Lubrication Engineer for an authoritative survey of your automatics. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. S-FM-22.

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LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

August 3, 1959

Most Steel Stocks Good Through August

THIN SPOTS have not yet appeared in consumers' supplies. But as the steel strike goes into its fourth week with no sign of an early settlement, market attention is increasingly focused on stocks.

Inventories were estimated at 21 million net tons at the start of the walkout, adequate to support manufacturing schedules pretty much through August. But the continued trickle of new orders for steel is a clue that buyers are uneasy and will become more so as holes show up in their stockpiles.

WATCH SERVICE CENTERS— Supply difficulties will probably be first detected by the distributors. The service centers were not under much buying pressure during July, but within the last week, stronger demand developed.

The distributors' inventory position is comfortable. But they are committed to caring for regular customers before entertaining business from other sources. The service centers are reporting weekly to the Business & Defense Services Administration on the status of steel stocks used in the defense program. Their latest study showed they were adequate under present circumstances.

BOOKING ORDERS— The mills are accepting new tonnage offered them, but they are not actively soliciting business, and bookings are subject to placement in rolling schedules at producers' convenience. Buyers know they stand little chance of getting any new tonnage processed before the fourth quarter. Even if the strike is settled soon, it would take close to three weeks for the mills to get back to normal operations.

Carryover tonnage, plus orders booked before the strike for late third quarter delivery, are bound to push new bookings into October and beyond. However, heavy consumer pressure to place new tonnage is not likely to show up for several weeks. Right now, production of 1959 automobile models is slowing down and will end for most within a couple weeks. This will take some of the pressure off stocks.

IMPORT PRICES RISE— One of the most significant developments of recent weeks is the strengthening of prices on imported steel products. They have pushed up to the domestic level on stockpiled imports at Houston. In some cases they have gone even higher.

Representatives of foreign mills do not expect a new U. S. buying rush unless the strike continues more than two months. However, foreign steel is still coming into the country at Atlantic, Gulf, Pacific, and Great Lakes ports. Last week more than 6000 tons came in at Buffalo.

SCRAP IS FIRM— Despite the absence of active mill demand, the scrap market is steady to strong. STEEL's index is holding at $38.67 for the third straight week. This show of strength is partly attributable to heavy export demand—four vessels were loaded at Philadelphia last week. Also, scrapmen anticipate an active movement from their yards after the strike.

STEEL RATE DIPS— Ingot operations last week were estimated at 12.5 per cent of capacity, off a little less than ½ percentage point from the preceding week's revised rate of 12.9 per cent. Half a hundred companies still operate. Most of those whose contracts were to expire July 31 have won 14 day extensions.

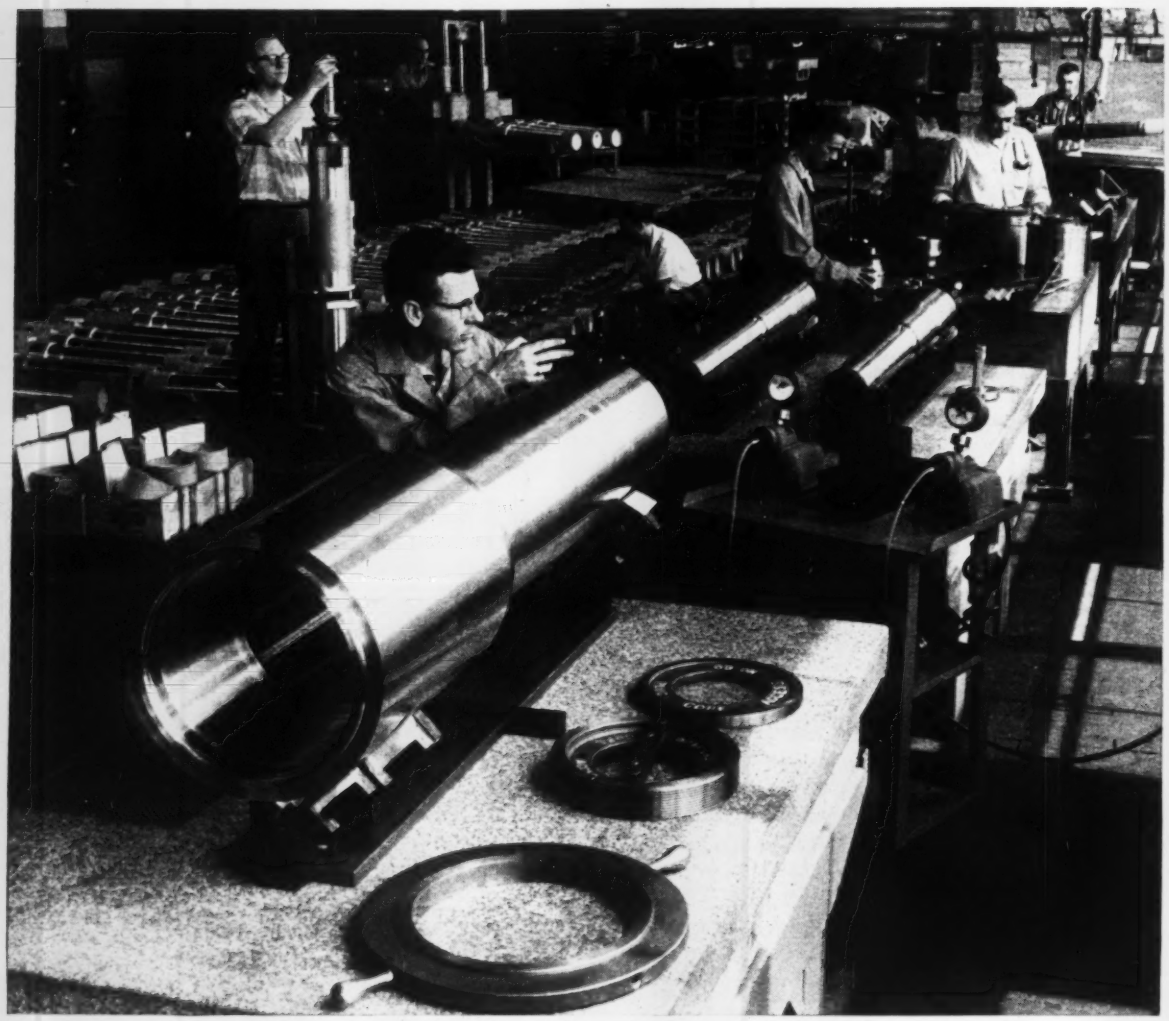
WHERE TO FIND MARKETS & PRICES

	News	Prices		News	Prices
Bars, Merchant	105	113	Pig Iron	107	118
Reinforcing	...	114	Piling	...	113
Boiler Tubes	...	116	Plates	105	113
Canada	...	*	Plating Material	...	129
Clad Steel	...	117	Prestressed Strand	...	*
Coke	...	119	Price Indexes	...	111
Coal Chemicals	...	119	Producers' Key	114	...
Charts:			R.R. Materials	109	116
Finished Steel	...	111	Refractories	...	119
Ingot Rate	110	...	Scrap	123	124
Scrap Prices	...	123	Semifinished	...	113
Comparisons	...	111	Service Centers	106	118
Contracts Placed	110	...	Sheets	104	114
Contracts Pend.	110	...	Silicon Steel	...	115
Electrodes	...	119	Stainless Steel	105	117
Fasteners	...	116	Steel Output	110	...
Ferroalloys	...	120	Strip	104	115
Fluorspar	...	119	Structurals	109	113
Footnotes	...	116	Tin Mill Prod.	...	115
Imported Steel	104	119	Tool Steel	...	117
Ingot Rates	110	...	Tubular Goods	106	117
Metal Powder	...	119	Wire	...	115
Nonferrous Met.	126	128			
Ores	...	119			

*Current prices were published in the July 27 issue and will appear in subsequent issues.

Metalworking Outlook—Page 29 Technical Outlook—Page 73

SPS RELIABILITY / *A dynamic standard of predictable performance*



SPS Nuclear Division inspector in foreground verifies 12 in. OD of reactor vessel core access housing. Tolerance: ±.001 inch. Precision granite surface plate assures absolutely level test bed, eliminates slightest distortion of jigs. Typical reactor vessel closure head incorporates some 50 of these large precision-machined housings—for control rods, instrument packages and access.

No random sampling here . . .

Parts reaching this final inspection area at the SPS Nuclear Components Division are already documented by detailed records of their dimensions. Presumably they are perfect. Yet to be certain, the records are put aside and every dimension of every part is checked and recorded again—and then cross-checked against the original figures. With a part such as the large core access housing in the foreground, this involves over 200 measurements, many to ±.0005 inch.

To make these checks, SPS technicians draw on more than $3 million worth of precision gaging, including the very latest air and electronic equipment. Most of this is of the comparator type, designed to eliminate possible misreadings, which sometimes occur with vernier scales.

Why this emphasis on perfection? Simply because these parts must function with 100% reliability in locations that are often made inaccessible by radiation. If you have requirements for such components (for reactors or for conventional power-producing machinery), contact SPS—manufacturer of precision threaded fasteners and allied products in many metals, including titanium. Request new Folder 2499.

NUCLEAR COMPONENTS Division SPS

JENKINTOWN 33, PENNSYLVANIA

STEEL
QUARTERLY SURVEY

MILL PRODUCTS	CURRENT INVENTORIES					4th Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	—	13%	43%	25%	19%	43%	43%	14%
COLD-FINISHED BARS	1%	16%	33%	33%	17%	49%	47%	4%
H & C-R SHEETS, STRIP	—	9%	35%	37%	19%	59%	34%	7%
LIGHT PLATES	1%	9%	43%	27%	20%	39%	54%	7%
HEAVY PLATES	1%	10%	44%	27%	18%	46%	46%	8%
STRUCTURAL SHAPES	—	3%	53%	27%	17%	32%	53%	15%
COPPER & BRASS	5%	18%	41%	21%	15%	31%	64%	5%
ALUMINUM	3%	9%	46%	30%	12%	32%	60%	8%

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR UNDERSCORED figures show how most respondents reported.

Most Inventories Still in Good Shape

The stock buildup appears to be adequate. Only 14 per cent of STEEL's respondents expect trouble within a month. Outlook: Inventories down; big upsurge when steel strike ends

ALTHOUGH considerable inventories have been eaten away as the steel strike enters its fourth week, most metal buyers are in pretty good shape. But you can be sure there will be a surge of restocking once the strike is over as metalworking companies try to meet the demands of an expected fourth quarter boom.

Only 14 per cent of STEEL's quarterly survey respondents report metal inventories will last less than 30 days. About 46 per cent can hold on for more than 60 days. Despite good business this year which used up many reserves earmarked for the strike period, 47 per cent report inventories are above those of three months ago. Only 19 per cent experienced a stock depletion, while 34 per cent say they're the same.

In steel, 47 per cent of the users have enough material to last more than 60 days. Again, only 14 per cent have less than 30 days' supply.

Except for heavy plates, all categories were up in the three to six months period. Light plates and structurals were the only items which didn't at least stay the same in the 60 to 90 day levels. Except in three instances, all stocks under 30 days declined. There are a few spot shortages, mostly in specialty items.

• **Outlook**—Three months hence, inventories will be about the same as now, 46 per cent of STEEL's respondents predict. Forty-five per cent say they'll be down. Only 9 per cent foresee a continued upturn. Buyers of cold finished bars and hot and cold rolled sheets and strip expect the most difficulties by the end of the quarter. Purchasers of nonferrous and structural shapes anticipate the least trouble.

• **Deliveries**—Just before the strike, deliveries were, of course, hard to come by. Although 31 per cent reported such problems, that was a 13 per cent drop from the previous survey. Reasons: 1. Many stocks were as high as purchasing agents wanted to build them and still safely hedge on the strike. 2. A few firms had given up trying to get some items. High on the storage list:

Heavy plates, stainless steel items, hot rolled sheets and strip, and cold rolled sheets.

Some purchasers reported reserves of cold finished sheets and strip to be particularly high. Heavy plates, light plates, and hot rolled sheets and strip were also mentioned.

• **Nonferrous** — Aluminum buyers had stockpiled against a possible strike (the July 31 deadline has been extended—see Page 38). A third of the respondents expect lower inventories by the end of the quarter. Copper buyers are hedging against a strike and have increased stocks.

Prices of Imported Steel Raised to Domestic Level

Prices on stockpiled foreign steel in the Houston area have pushed up to the domestic mill level and in some cases are slightly higher. Sellers are continually circulating new price lists in the Southwest, and it is difficult to make comparisons. Many sellers change their prices almost daily.

Only one foreign mill represented directly in Houston has raised its prices since the steel strike started. New prices quoted are almost on a par with U. S. mill quotations at the base price level. However, European size extras are much less than quoted by domestic mills, so that price differences of $10 to $25 a ton are still noted.

Steel buyers in the Southwest are experiencing no hardships as a result of the strike. They have good inventories, and there are adequate stores of foreign steel to permit normal manufacturing operations for at least 60 days.

Representatives of the foreign mills do not expect a new U. S. buying rush to begin unless the strike continues more than two months.

Foreign steel also is continuing to come into Great Lakes ports via the St. Lawrence Seaway. Last week the arrival of more than 6000 tons at Buffalo highlighted market developments in that area. A ship of Norwegian registry docked with 558 tons and was followed by a Swedish vessel with 3112 tons. Later a French vessel arrived with 2400 tons of scrap rails.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 114 & 115

Consumers are still showing pretty lively interest in cold rolled and galvanized sheets, though most users realize they won't be able to get a definite scheduling of new tonnage by the strikebound mills until the fourth quarter. However, they are anxious to get a position on mill books for delivery as soon as possible.

The situation in galvanized is tighter than that in cold rolled, but there is only a limited demand coming out for hot rolled sheets.

In general, the sheetmakers are booking business for the fourth quarter, but delivery is unspecified, being dependent upon producers' ability to give shipment after the strike.

Actually, orders are little more than trickling in, since the bulk of third quarter orders had been placed before the mills were struck. Some fourth quarter tonnage also had been accepted prior to the strike.

Steel Service Centers throughout the country have built up their inventories in anticipation of a suspension in steel production. These stockpiles totaling almost 3,600,000 tons are valued at ¾ billion dollars. If you have been using a steel service center as your source of supply—you can thank your lucky stars—because chances are they will still be able to fill your requirements.

Each distributor's representative is a metal specialist and is qualified to assist you with application and supply problems.

MICROROLD STAINLESS STEEL is regularly carried in stock in 252 of these independent steel warehouses. Washington Steel is a producer of sheet and strip exclusively, all of which is precision rolled on Sendzimir mills.

WASHINGTON STEEL CORPORATION

8-O Woodland Avenue, Washington, Pa.

One Chicago district mill, for example, has orders on its books equivalent to 2½ months of production.

For the most part, mills are not actively soliciting new business, with consumer stocks adequate probably through August. This is especially so with consumption slowed by vacation curtailments at manufacturing plants.

Stainless Steel . . .

Stainless Steel Prices, Page 117

Heavy buying of stainless and specialty steels preceded the steel strike. E. J. Hanlon, president, Allegheny-Ludlum, says tonnages purchased in the first six months of the year were equal to the normal take of customers over a nine month period. At the end of June, he said, they had enough steel on hand to continue operations for two to three months.

Steel Bars . . .

Bar Prices, Page 113

Some barmakers have open space in September order books, but consumers appear to be in no hurry to place additional tonnage; apparently they hold comfortable inventories. However, the mills anticipate a buying rush to start when holes begin to appear in stockpiles.

Orders that come in for fourth quarter will be scheduled in the order of the receipt, shipments being subject to the delays resulting from the steel strike.

Sellers of cold finished bars are booking some fourth quarter business, but volume is developing slowly. In fact, the mills are not pressing the market for orders. Cold drawn plants not closed July 15 by the strike have continued to get out as much tonnage as they can. Some of the plants will close unless they get contract extensions from the union. And some may be forced down for lack of hot bar supplies.

While most of the bar mills didn't have too much carryover when the strike was called July 15, they will be a little slow getting back into production after the strike because they do not have much semifinished stock on hand. This is stimulating inquiry, and more is expected as consumer inventories shrink and manufacturing operations resume following vacation suspensions.

Plates . . .

Plate Prices, Page 113

There is no particular pressure for carbon plates. A little more activity in alloy and stainless grades reflects livelier interest among the oil and chemical companies. Most orders are being entered tentatively for fourth quarter rolling.

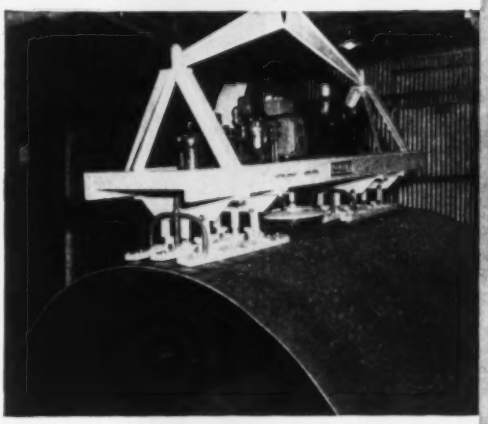
Consumer inventories continue adequate. This is particularly true of most tank, boiler shops, and shipyards. Shipyard work is on such a long leadtime that it probably won't be affected for some time. Jobbing shops, such as manufacturers of pressure vessels, are not in such good inventory position to handle all the specialty work that continues to come through.

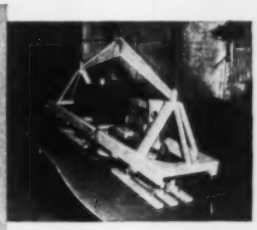
The federal maritime board will open bids Oct. 1 on three combination passenger, freight, and container ships for the Grace Line. The vessels will have an over-all length of 545 ft and a beam of 79 ft.

There's some question about two

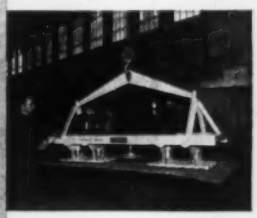
Another Problem Solved by
VAC-U-LIFT

Newly developed unit handles heavy curved steel plate from inside or outside





Photograph above demonstrates versatility of VAC-U-LIFT unit handling inside contour of 72" curved sheet metal weighing up to 2000 pounds.



The same VAC-U-LIFT unit is easily adaptable to handling flat sheet stock in conveying systems, transferring material from stock stacks to work area.

Easier, Faster, Safer and More Economical!

This 8-foot vacuum material handling unit, created and produced by VAC-U-LIFT, provides the solution to another difficult handling problem. One man easily lifts and moves unwieldy steel half cylinders, inside or outside contours as well as flat stock, resulting in tremendous savings of time and labor. VAC-U-LIFT units are also used in conjunction with cranes and overhead conveyors, handling concrete slabs, pipe, glass, ceramic products, etc. Special custom-built VAC-U-LIFT units have been produced as automatic turnover units and for automated material handling from 20 tons down to a few ounces. Investigate and learn how VAC-U-LIFT systems can help you with your material handling problems.

***VAC-U-LIFT SYSTEMS** quickly, economically and safely solve difficult handling problems regardless of weight, shape or size.*

SEND TODAY FOR *FREE* ILLUSTRATED BROCHURE

This brochure shows some of the many VAC-U-LIFT systems now in use. It explains how VAC-U-LIFT works and how you can take advantage of VAC-U-LIFT'S 3-step analyzation service without cost or obligation, write

Dept. VL-53

VAC-U-LIFT CO. Salem, Illinois

Division of The Siegler Corporation

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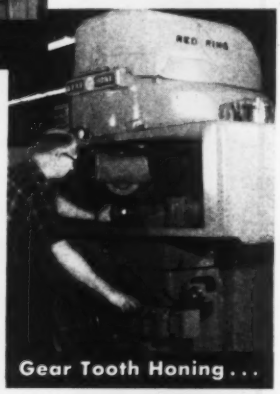
Left—High accuracy balancing of rotating parts, including unusual off-center and counterweighted designs, can be handled rapidly and efficiently with the aid of this ingenious machine which utilizes stroboscopic light to locate the unbalance, an electric meter to measure the amount of unbalance, and a drill, mounted integrally, to remove indicated amount of metal for desired balance—followed by immediate inspection—all completed in a single handling.

Below—Other examples of specialized equipment "at your service" at FAIRFIELD.

Gear Balancing . . .



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Bolt Hole Honing . . .

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eastern plate mills being able to continue operations under arrangement with the union. Their contracts were due to expire at the end of July. However, the plate division of Phoenix Steel Corp., Harrisburg, Pa., was not immediately threatened because its union contract doesn't expire until 30 days after the U. S. Steel Corp. settlement. That arrangement also applies to the tube and structural divisions of Phoenix.

Tubular Good . . .

Tubular Goods Prices, Page 117

New business in oil country goods and standard pipe is being booked on a monthly basis. Third quarter orders were accepted by some mills up to their July 25 cutoff date. However, anything booked since the strike started is viewed as fourth quarter shipment tonnage since the mills are not likely to be in position to schedule much additional for September. Carryover orders will have precedence in mill schedules when production is resumed.

Damascus Tube Co., Greenville, Pa., has announced that all pressure tubing leaving its plant is eddy current inspected. This permits the manufacturer to assure customers that every length of tubing delivered will meet specifications.

The Hughes Tool Co. rotary rig count for the week ending July 20 showed 2196 wells being drilled, 424 more than a year ago.

Distributors . . .

Prices, Page 118

Business at service centers was much slower in July than it was in June because of vacation suspensions at metalworking plants. But the decline is being cushioned by needs arising from the steel strike, a counterinfluence which should assume greater importance if the walkout develops into a prolonged one.

An upturn in bookings seems assured for this month. Some increased buying of steel from service centers the last few days includes alloy and specialty steels. A number of the mills which make those products are not affected by the strike. So users didn't build up their inventories to the degree they did in carbon steels. The specialty mills, now swamped with demand, are running behind on deliveries, forcing users to seek needed material

from distributors. Demand for cold finished carbon steel is stronger too.

Another effect of the steel strike on service centers is the firming of the price structure in the Southwest. Price shading to meet foreign competition has disappeared because distributors will have no trouble in disposing of their stocks at published prices. Supplies held by service centers in that area are believed sufficient to cover normal requirements for 60 to 90 days.

Blast Furnace Production Sets First Half Record

Blast furnaces produced a record 42,393,666 net tons of pig iron and ferroalloys during the first six months of this year, reports the American Iron & Steel Institute. The previous record first half production was 41.7 million tons produced in 1957. The record for the second half was 40,313,186 tons in the latter part of 1955.

Production in June was 7,289,946 net tons vs. 7,747,996 in May (a monthly record) and 4,422,748 in June last year. Production in June and for the first half by states follows:

Pig Iron-Ferroalloy Production

(June and First 6 Months, 1959)

(Net tons)

States:	June	Year to Date
Massachusetts, New York	474,158	2,669,287
Pennsylvania	1,923,954	11,112,395
Maryland, Virginia, West Virginia	654,790	3,676,480
Kentucky, Tennessee, Texas	167,181	940,755
Alabama	449,907	2,459,442
Ohio	1,406,014	8,065,383
Indiana	792,894	4,923,833
Illinois	615,247	3,580,816
Michigan, Minnesota	428,735	2,685,208
Colorado, Utah, California	377,066	2,280,067
Totals	7,289,946*	42,393,666**

*Includes 58,315 tons of ferromanganese and spiegeleisen.

**Includes 318,923 tons of ferromanganese and spiegeleisen.

Data from American Iron & Steel Institute.

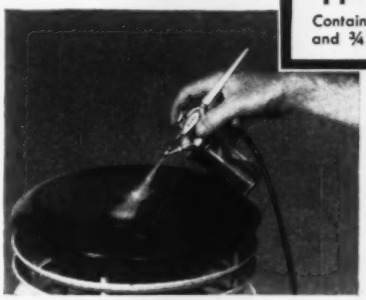
Pig Iron . . .

Pig Iron Prices, Page 118

Those merchant blast furnaces not closed by the strike are getting requests for tonnages from consumers whose usual supply sources are strikebound. The orders are being filled without too much trouble since the tonnages are comparatively small.

Merchant iron buyers are not too concerned about supplies. They hold inventories which are ample

New way to spray finishing materials for touch-up or decoration



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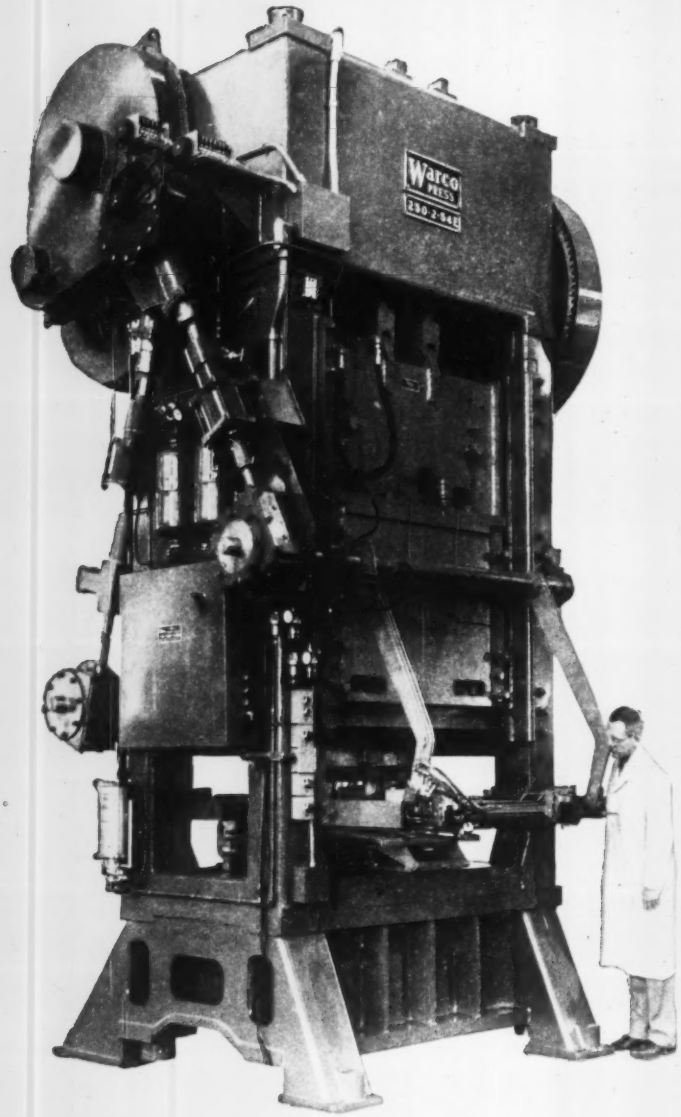

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for the time being. Some are closed for vacations but continue to take in iron shipments as added protection.

Operations at foundries are scheduled to improve this month, indicating a pickup in pig iron demand. Some foundries are buying more cast scrap in an effort to conserve iron supplies.

Rails, Cars . . .

Track Material Prices, Page 116

The Class 1 railroads installed in service 502 new locomotive units in the first half, reports the Association of American Railroads. All but four were diesel-electric—they were gas turbine-electric units. In the same period in 1958, the roads installed 311 units, all diesel-electric.

During April, May, and June, the Class 1 roads installed in service 298 units—297 were diesel-electrics; one was a gas turbine-electric. In the like 1958 period, they installed 74 units, all diesel-electrics.

New locomotive units on order on July 1 totaled 413, of which 391 are diesel-electric and 22 gas turbine-electric units. Class 1 roads on July 1, 1958, had 134 locomotives on order, of which 104 were diesel-electric and 30 gas turbine-electric.

The Atlantic Coast Line Railroad has placed an order for 1000 freight cars with the American Car & Foundry Div., ACF Industries Inc. It includes 700, fifty ft boxcars and 300, seventy ton wet rock phosphate hopper cars. All are expected to be delivered in October and November.

The order raises to 1200 the number of cars added by Atlantic Coast Line in the last four months. Cost exceeds $13.5 million.

The 300 wet rock hoppercars were designed by the road's engineers. They will be used exclusively to haul wet phosphate rock from mines in Florida.

Structural Shapes . . .

Structural Shape Prices, Page 113

Structural steel bookings in June totaled 290,911 tons, reports the American Institute of Steel Construction. Except for last July, this was the largest monthly tonnage booked since May, 1957.

Total bookings for the first six months were 1,612,253 tons, 28 per cent greater than in the like period of 1958.

June shipments climbed to the highest level in 20 months, amounting to 365,434 tons. They represented the highest prestrike movement ever recorded, and for the first time this year exceeded the same month of 1958.

Order backlogs as of June 30 were 1,717,098 tons. Of this total, 1,107,739 were scheduled for fabrication during the four months ending Oct. 31.

Public work still dominates the market. Bridgework remains the principal source of activity in the East, although the largest single job being estimated in the district is the new building for the Smithsonian Institution, Washington, requiring 10,000 tons.

Private demand continues light, but there is a fair scattering of schoolwork. Building underway has not been affected by the steel strike, except in those instances where fabricating shops are closed and where there is a walkout at construction sites (notably work underway at some steel plants). In general, fabricators are not threatened with an early walkout because many shops have contracts that do not expire until fall and later. Meanwhile, many have enough steel on hand to permit full operations another two months.

The structural mills are booking some September orders, and a little fourth quarter business is trickling in. However, firm shipment promises are withheld, being dependent on the outcome of the strike. The mills are not actively soliciting fourth quarter business.

Irvington Iron & Steel Works has been awarded contracts for steel fabrication and erection of two bridges to be constructed in the New Brunswick, N. J. area. The River Road Interchange bridge will be 285 ft long and will be constructed of 110 ft long welded plate girders. The Davidson Bridge (also plate girder construction) will be 250 ft long.

Bids have been invited by the Republic of Iraq for construction of Karradah Bridge across the Tigris

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River in Baghdad. The contract calls for erection of a suspension-type structure, about 1250 ft long.

Judson Pacific-Murphy Div. of Yuba Consolidated Industries Inc., San Francisco, was low bidder for the construction of the substructure and the superstructure of the mile-long Martinez-Benicia Bridge over San Francisco Bay. It will require 13,200 tons of structurals, 1050 tons of reinforcing bars, and 9170 lineal ft of 60 in. steel pipe caissons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2100 tons, engineering center, Columbia University, through Walsh Construction Co. to Bethlehem Steel Co., Bethlehem, Pa.

1500 tons, powerhouse, unit No. 3, Mississippi Power Co., to Ingalls Iron Works Co., Birmingham.

850 tons, No. 3 galvanizing shop, Armco Steel Corp., Middletown, Ohio, through McGraw Construction Co., to Ingalls Iron Works Co., Birmingham.

450 tons, powerhouse, New York State University, Albany, N. Y., through Depot Construction Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

350 tons, warehouse and finishing plant, General Electric Co., Mt. Vernon, Ind., to International Steel Co., Evansville, Ind.

150 tons, sewer intake structures, New York Power Authority, Niagara Falls, N. Y., through Merritt-Chapman & Scott, New York, to Ernst Construction Co., Buffalo.

STRUCTURAL STEEL PENDING

10,000 tons, building, Smithsonian Institution, Washington, D. C.; General Services Administration taking bids Aug. 4.

3200 tons, maintenance building, American Airlines, Chicago, Malan Construction Co., New York, low on the general contract.

3089 tons, state bridgework, ARC 59-118, Route 17, Broome County, New York, bids Aug. 6.

2824 tons, Morgan Street interchange, Hartford, Conn., Sabin Bros. Inc., Wethersfield, Conn., low on the general contract.

2775 tons, state bridgework, Danbury, Conn., M. J. Orlando, Queens, N. Y., low on the general contract.

1867 tons, state bridgework, FISH 59-16, Jefferson County, New York, bids Aug. 6.

1834 tons, state bridgework, FARC 59-100, Route 37, Franklin and St. Lawrence Counties, New York, bids Aug. 6.

1821 tons, state bridgework, Essex County, New Jersey, Franklin Contracting Co., low on general contract.

1361 tons, state bridge relocation, Route 25, Newton, Conn., Frouge Construction Co., Bridgeport, Conn., low on the general contract.

1282 tons, grandstand, Yonkers Raceway, Yonkers, N. Y., Yonkers Construction Co., that city, low on general contract.

1146 tons, state highway projects 34-103 and 105, Danbury, Conn., bids Aug. 3.

951 tons, state bridgework, Monroe County, New York, H. L. Baughman Inc., Rochester, N. Y., low on the general contract.

864 tons, state bridgework, FASH 59-13, Suffolk County, New York; bids Aug. 6.

856 tons, state highway project 34-83, Danbury, Conn., L. G. Defoe & Son, North Haven, Conn., low on the general contract.

800 tons, Public School 274, Brooklyn, N. Y.; bids Aug. 18.

731 tons, state bridgework, FISH 59-1 and FARC 59-1, Oswego County, New York; bids Aug. 6.

500 tons, Public School 262, Brooklyn, N. Y.; bids Aug. 5.

225 tons, state bridgework, FARC 59-110, Rensselaer and Saratoga Counties, New York; bids Aug. 6.

194 tons, state bridgework, FASS 59-20, Ulster County, New York; bids Aug. 6.

141 tons, state bridge project, 103-93, over Yantic River, Norwich, Conn., Bingham & C. H. Ilkot, Eastford, Conn., low on the general contract.

123 tons, state bridgework, LR-090-17 /3/, Bucks County, Pennsylvania, bids Aug. 7.

120 tons, factory building, National Can Co., Hanover, Pa.; bids Aug. 7.

100 tons, state bridgework, LR-090-12 /2/, Bucks County, Pennsylvania, bids Aug. 7.

PLATES . . .

PLATES PLACED

600 tons, five fuel tanks, Wilmington, N. C., through Roy Henwood Associates, to Chicago Bridge & Iron Co., Chicago.

PIPE . . .

STEEL PIPE PENDING

110 tons, large diameter pipe for the City of Philadelphia; bids Aug. 4.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Southern Pacific, 35 diesel locomotives, 20 going to the Electro-Motive Div., General Motors Corp., La Grange, Ill., and 15 to Alco Products Inc., Schenectady, N. Y. Thirty-two of the locomotives are in the 1750 to 1800 hp class, and three are in the 2400 hp class.

RAILROAD CARS PLACED

Chicago & Northwestern, 150 all-steel caboose cars, to Thrall Car Mfg. Co., Chicago Heights, Ill.

Atlantic Coast Line, 1000 freight cars to ACF Industries Inc., New York; list comprises 700 boxcars and 300 hoppers.

Chicago, Milwaukee, St. Paul & Pacific, 25 seventy-ton gondola cars to the Thrall Car Mfg. Co., Chicago Heights, Ill.

RAILROAD CARS PENDING

Nickel Plate, 500 boxcars, bids asked. The company is converting 165 boxcars to piggyback flatcars, equipping 25 gondolas with steel covers and equipping 65 cars for the handling of coil steel.

First Half Steel Output Way Above Last Year's

Steel production in June was 10,907,634 net tons, bringing the total for the first six months to 64,278,203 tons, reports the American Iron & Steel Institute. Output in June a year ago was 7,127,480 tons and that for the first six months, 37,752,487 tons.

The breakdown of production by states:

Steel Production—June, 1959

(Net tons)

States:	June	Year to Date
New York	570,949	3,393,462
Pennsylvania	2,859,459	16,474,449
R. I., Conn., N. J., Del., Md.	749,245	4,419,689
Va., W. Va., Ga., Fla.	264,502	1,683,883
Kentucky	143,800	844,272
Alabama, Tenn., Miss.	399,520	2,336,227
Ohio	2,014,856	11,817,506
Indiana	1,416,516	8,499,283
Illinois	867,154	5,158,680
Michigan	625,624	3,735,498
Minn., Mo., Okla., Texas	322,935	1,930,290
Ariz., Colo., Utah, Wash., Oreg.	341,153	2,153,435
California	331,921	1,831,529
Totals	10,907,634	64,278,203
Tonnage lost from work stoppages	64,000	174,000

Data from American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

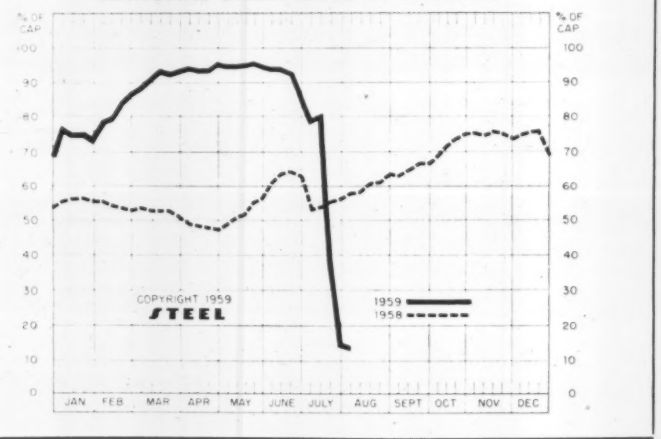
	Week Ended Aug. 2	Change	Same Week 1958	Same Week 1957
Pittsburgh	2	— 0.5	50	79.5
Chicago	5.5	+ 0.5	65	83.5
Eastern	11	— 3	58	85.5
Youngstown	9	0	52	77
Wheeling	51	0	73.5	72
Cleveland	6	+ 0.5*	54	79
Buffalo	4	0	50	88
Birmingham	9	0	52	85.5
Cincinnati	68.5	— 1*	38.5	67.5
St. Louis	53.5	— 3*	90	87
Detroit	24	+ 0.5*	67	90
Western	5	— 1	67	99
National Rate	12.5	— 0.4*	59	79

INGOT PRODUCTION

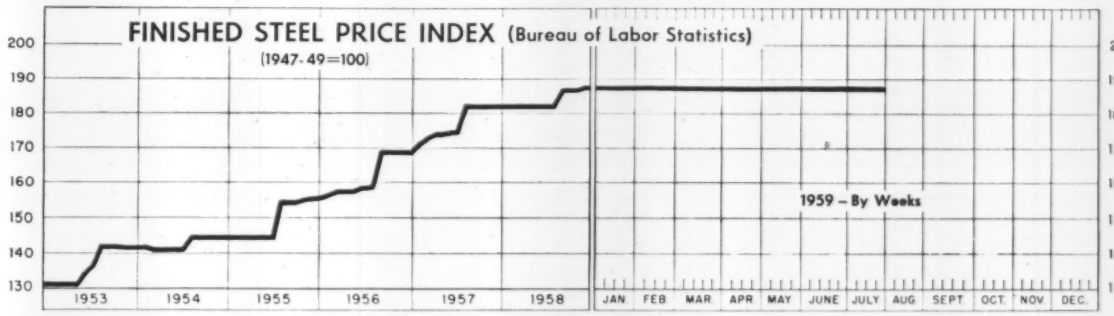
	Week Ended Aug. 2	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	22.0†	22.7	137.9	97.2
NET TONS (In thousands)	354†	365	2,215	1,561

*Change from preceding week's revised rate.
†Estimated by STEEL; comparative figures reported by AISI.
Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



July 28, 1959	Week Ago	Month Ago	June Avg.	Year Ago
186.7	186.7	186.7	186.7	181.5

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended July 28

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.875
Axles, Railway	10.175
Wheels, Freight Car, 33 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R. Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.543
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.385
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.570
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.615
Sheets, C.R., Stainless, 302 (lb)	0.658
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.480
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	19.905
Pipe, Galv., Buttweld (100 ft)	23.253
Pipe, Line (100 ft)	199.533
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	27.005
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
Black Plate, Canmaking Quality (95 lb base box)	7.900
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.665
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.825
Wire, Barbed (80-rod spool)	8.722
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	July 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	195.87
Index in cents per lb	6.713	6.713	6.713	6.479	5.306

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$117.43
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	38.67	38.67	36.83	40.00	27.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	July 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.30
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.30
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.55
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.40
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.25
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.25
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.53
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.225
Plates, Chicago	5.30	5.30	5.30	5.10	4.225
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.225
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.225
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.225
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.05
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	4.05
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.95
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.95
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05	5.10
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.45
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	4.05
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.75
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	6.00
Strip, C.R., Detroit	7.425	7.425	7.425	7.15	5.60-5.90
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.75
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	5.85
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$78.00
Wire rods $\frac{7}{32}$-$\frac{5}{16}$" Pitts.	6.40	6.40	6.40	6.15	4.675

PIG IRON, Gross Ton	July 29 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pittsburgh	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Philadelphia	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birmingham	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld., Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$39.50	$39.50	$36.50	$41.50	$28.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	38.00	36.00	24.50
No. 1 Heavy Melt, Chicago	36.50	36.50	36.00	42.50	29.00
No. 1 Heavy Melt, Valley	41.50	41.50	41.50	43.50	26.50
No. 1 Heavy Melt, Cleve.	38.50	38.50	38.50	38.50	24.50
No. 1 Heavy Melt, Buffalo	33.50	33.50	33.50	27.50	26.50
Rails, Rerolling, Chicago	59.50	59.50	59.50	61.50	43.50
No. 1 Cast, Chicago	52.50	52.50	52.50	44.50	35.50

COKE, Net Ton					
Beehive, Furn., Connisvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connisvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

Quantity
PRODUCTION
of
GREY IRON CASTINGS

*

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

*

ESTABLISHED 1866

THE WHELAND COMPANY

FOUNDRY DIVISION

MAIN OFFICE AND MANUFACTURING PLANTS

CHATTANOOGA 2, TENNESSEE

Steel Prices

Mill prices as reported to STEEL, July 29, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 114; footnotes, page 116.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)
Detroit S41 ..... $82.00
Economy,Pa. B14 ..... 82.00
Farrell,Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B2 ..... 80.00
Lackawanna,N.Y. B2.. 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 80.00
S.Chicago,Ill. R2, U5 .. 80.00
S.Duquesne,Pa. U5 .... 80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 .... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3.. 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2.. 99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. G8 ..... 99.50
Seattle B3 ..... 109.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14.. 99.50
S.Duquesne,Pa. U5 .... 99.50
S.SanFrancisco B3 .... 109.00
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 .... $119.00
Bridgeport,Conn. C32.. 119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 .... 119.00
Conshohocken,Pa. A3.. 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 .... 119.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 .... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 .. 119.00
Johnstown,Pa. B2 .... 119.00
Lackawanna,N.Y. B2.. 119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 .... 119.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 .... 119.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14.. 119.00
S.Duquesne,Pa. U5 .... 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 .. 122.50
Warren,O. C17 ..... 122.50

SKELP
Aliquippa,Pa. J5 ..... 5.05
Munhall,Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O R2 ..... 5.05
Youngstown R2, U5 .... 5.05

WIRE RODS
AlabamaCity,Ala. R2 .. 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 .... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1.. 6.40
Johnstown,Pa. B2 ..... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 .... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 .... 6.65
Monessen,Pa. P7 ..... 6.40
Pittsburg,Calif. C11 .... 7.20
Portsmouth,O. P12 .... 6.40
Roebling,N.J. R5 ..... 6.50
S.Chicago,Ill. R2, W14.. 6.40
SparrowsPoint,Md. B2 .. 6.50
Sterling,Ill.(1) N15 .... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 .... 6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 .. 5.50
Aliquippa,Pa. J5 ..... 5.50
Atlanta A11 ..... 5.70
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 ..... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 ..... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 .... 5.60
Lackawanna,N.Y. B2 .. 5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 .... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 .... 5.55
Portland,Oreg. O4 ..... 6.25
Seattle B3 ..... 6.25
S.Chicago,Ill. U5, W14.. 5.50
S.SanFrancisco B3 .... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 .... 6.20
Weirton,W.Va. W6 .... 5.50

Wide Flange
Bethlehem,Pa. B2 ..... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 .... 6.45
IndianaHarbor,Ind. I-2.. 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 .... 5.55
S.Chicago,Ill. U5 ..... 5.50
Sterling,Ill. N15 ..... 5.50
Weirton,W.Va. W6 .... 5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5, W14.. 6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 ..... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 ..... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 ..... 8.10
KansasCity,Mo. S5 .... 8.15
Lackawanna,N.Y. B2 .. 8.10
LosAngeles B3 ..... 8.75
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago,Ill. U5, W14.. 8.05
S.SanFrancisco B3 .... 8.70
Sterling,Ill. N15 ..... 7.75
Struthers,O. Y1 ..... 8.05

H.S., L.A., Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 .... 8.05
Lackawanna,N.Y. B2 .. 8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05
Sterling,Ill. N15 ..... 7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 .. 5.50
Lackawanna,N.Y. B2 .. 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 .. 5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 .... 6.50
Lackawanna,N.Y. B2 .. 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 .. 6.50
Weirton,W.Va. W6 .... 6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 .. 5.30
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 .... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 .... 5.30
Conshohocken,Pa. A3 .. 5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 .. 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity,Ill. G4 .... 5.40
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 .. 5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 .... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14.. 5.30
SparrowsPoint,Md. B2 .. 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 .... 5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 .... 5.30
Youngstown (27) R2 .. 5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .... 7.05
Fontana,Calif. K1 .... 7.85
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 .. 7.05

PLATES, Wrought Iron
Economy,Pa. B14 .... 13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ..... 7.95
Ashland,Ky. A10 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 .... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 .... 7.95
Conshohocken,Pa. A3 .. 7.95
Economy,Pa. B14 ..... 7.95
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif.(30) K1 .. 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14.. 7.95
SparrowsPoint,Md. B2 .. 7.95
Warren,O. R2 ..... 7.95
Younstown U5, Y1 .... 7.95

PLATES, Alloy
Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 .... 7.50
Coatesville,Pa. L7 .... 7.50
Economy,Pa. B14 ..... 7.50
Farrell,Pa. S3 ..... 7.50
Fontana,Calif. K1 .... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 .... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 .... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B2 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5, W14.. 7.50
SparrowsPoint,Md. B2 .. 7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES
Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 .. 6.375
Ind.Harbor,Ind. I-2 .. 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 .. 5.55
Ashland l.c.l.(15) A10 .. 6.05
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 .... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 .. 5.675
Aliquippa,Pa. (9) J5 .. 5.675
Alton,Ill. L1 ..... 5.875
Atlanta (9) A11 ..... 5.875
Bessemer,Ala.(9) T2 .. 5.675
Birmingham(9) C15 .... 5.675
Buffalo(9) R2 ..... 5.675
Canton,O. (23) R2 ..... 6.15
Clairton,Pa.(9) U5 .. 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 .... 5.675
Emeryville,Calif. J7 .... 6.45
Fairfield,Ala.(9) T2 .. 5.675
Fairless,Pa.(9) U5 .... 5.825
Fontana,Calif.(9) K1 .. 6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1.. 5.675
Johnstown,Pa.(9) B2 .. 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5.. 5.925
Lackawanna(9) B2 .... 5.675
LosAngeles(9) B3 .... 6.375
Massillon,O. (23) R2 .. 6.15
Midland,Pa.(23) C18 .. 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 .. 6.125
Niles,Calif. P1 ..... 6.375
Owensboro,Ky.(9) G8 .. 6.025
Pittsburg,Calif.(9) C11.6.375
Pittsburgh(9) J5 ..... 5.675
Portland,Oreg. O4 .... 6.425
Riverdale,Ill.(9) A1 .. 5.675
Seattle A24, B3, N14 .. 6.425
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5.. 5.675
S.SanFran.,Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15.. 5.675
Sterling,Ill.(9) N15 .... 5.775
Struthers,O.(9) Y1 .... 5.675
Tonawanda,N.Y. B12 .. 5.675
Torrance,Calif.(9) C11.6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5.5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 .... 6.725
Bridgeport,Conn. C32 .. 6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 .... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 .... 6.725
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 .... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 .... 6.725
KansasCity,Mo. S5 .... 6.975
Lackawanna,N.Y. B2 .. 6.725
LosAngeles B3 ..... 7.775
Lowellville,O. S3 .... 6.725
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 .... 6.725
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 .... 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R.
High-Strength, Low-Alloy
Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 .... 8.30
Clairton,Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 .... 9.00
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 .... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 .... 8.55
Lackawanna,N.Y. B2 .. 8.30
LosAngeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. R2, W14.. 8.30
S.Duquesne,Pa. U5 .... 8.30
S.SanFrancisco B3 .... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 .. 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9)S5 .. 5.925
Lackawanna(9) B2 .... 5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 .... 5.675
Tonawanda,N.Y. B12 .. 5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 .... 6.425
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 .... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 .. 11.75*

Alloy
Ambridge,Pa. W18 ...10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 ....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .... 7.65
BeaverFalls,Pa. M12,R2.7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 .... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.66
FranklinPark,Ill. N5 .. 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 .... 7.65
Hammond,Ind. J5, L2 .. 7.65
Hartford,Conn. R2 .... 8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 .... 9.10
LosAngeles(49) P2, R2.9.10
Mansfield,Mass. B5 .... 8.20
Massillon,O. R2, R8 .... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 .. 7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 .... 7.90
Putnam,Conn. W18 .... 8.20
Readville,Mass. C14 .... 8.20
S.Chicago,Ill. W14 .... 7.65
SpringCity,Pa. K3 .... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Waukegan,Ill. A7 ..... 7.65
Willimantic,Conn. J5 .. 8.15
Youngstown F3, Y1 .... 7.65

BARS, Cold-Finished Alloy (Turned and Ground)
Cumberland,Md.(5) C19.6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .... 9.025
BeaverFalls,Pa.M12,R2 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 .. 9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 9.025
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 .... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 .. 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 .... 9.025
Hammond,Ind. J5, L2 .. 9.025
Hartford,Conn. R2 .... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2.. 9.025
LosAngeles P2, S30 ..11.00
Mansfield,Mass. B5 .. 9.325
Massillon,O. R2, R8 .... 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 .... 9.225
S.Chicago,Ill. W14 .... 9.025
SpringCity,Pa. K3 .... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 9.025
Willimantic,Conn. J5 .. 9.325
Worcester,Mass. A7 .... 9.325
Youngstown F3, Y1 .... 9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ...5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 .....6.375
Pittsburgh,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle A24, B3, N14 . 6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ...5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 ..5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated: To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity Mo. S5 ....7.60
Lackawanna,N.Y. B2 ...7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 ....7.35
SandSprings,Okla. S5 ..7.60
Seattle A24, B3, N14 ..7.95
SparrowsPt.,Md. B2 ...7.33
St. Paul U8 .....8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt) B14 19.00
McK.Rks.(S.R.) L5 ..14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt)L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa. (3) F5 ..5.575
Franklin,Pa. (4) F5 ..5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ..5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 ....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 ....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .... 8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 .6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2.6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 ....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.325
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) B2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.50
Youngstown J5 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 ....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Bethlehem Steel Co., Pacific Coast Div.
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Conhors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Champan&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am.Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..5.10
Allenport,Pa. P7 .....5.10
Alton,Ill. L1 .....5.30
Ashland,Ky.(8) A10 ....5.10
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2, Y1..5.10
Johnstown Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2 5.10
LosAngeles(25) B3 ....5.85
LosAngeles C1 .....8.60
Minnequa,Colo. C10 ....6.20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle(25) B3 .....6.10
Seattle N14 .....6.60
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. W14 ....5.10
S.SanFrancisco(25) B3 .5.85
SparrowsPoint,Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.40
Farrell,Pa. S3 .....8.40
Gary,Ind. U5 .....8.40
Houston S5 .....8.65
Ind.Harbor,Ind. Y1 ....8.40
KansasCity,Mo. S5 ....8.65
LosAngeles B3 .....9.60
Lowellville,O. S3 .....8.40
Newport Ky. A2 .....8.40
Sharon,Pa. A2, S3 ....8.40
S.Chicago,Ill. W14 ....8.40
Youngstown U5, Y1 ....8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10 .....7.575
Bessemer,Ala. T2 .....7.575
Conshohocken,Pa. A3..7.575
Ecorse,Mich. G5 .....7.575
Fairfield,Ala. T2 .....7.575
Farrell,Pa. S3 .....7.575
Gary,Ind. U5 .....7.575
Ind.Harbor,Ind. I-2, Y1 7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ....8.325
Seattle(25) B3 .....8.575
Sharon,Pa. S3 .....7.575
S.Chicago,Ill. W14 ....7.575
S.SanFrancisco(25) B3..8.325
SparrowsPoint Md. B2..7.575
Warren,O. R2 .....7.575
Weirton,W.Va. W6 ....7.575
Youngstown U5, Y1 ..7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....5.35
Warren,O. R2 .....5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ....7.425
Baltimore T6 .....7.425
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7, J5 .....7.425
Dearborn,Mich. S3 ....7.425
Detroit D2, M1, P20 ..7.425
Dover,O. G6 .....7.425
Evanston,Ill. M22 ....7.525
Farrell,Pa. S3 .....7.425
Follansbee,W.Va. W10 .7.425
Fontana,Calif. K1 ....9.20
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ...7.425
Indianapolis S41 .....7.575
LosAngeles C1, S41 ....9.30
McKeesport,Pa. E10 ...7.525
NewBedford,Mass. R10..7.875
NewBritain,Conn. S15..7.875
NewCastle,Pa. B4, E5 7.425
NewHaven,Conn. D2 ..7.875
NewKensington,Pa. A6..7.425
Pawtucket,R.I. R3 ....7.975
Pawtucket,R.I. N8 ....7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale,Ill. A1 .....7.525
Rome,N.Y. (32) R6 ...7.425
Sharon,Pa. S3 .....7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford Conn. W2..7.875
Warren,O. R2, T5 ....7.425
Worcester,Mass. A7 ...7.975

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Carnegie,Pa. S18 ....15.55
Cleveland A7 .....15.55
Dover,O. G6 .....15.55
Farrell,Pa. S3 .....15.55
FranklinPark,Ill. T6 ..15.55
Harrison,N.J. C18 ....15.55
Indianapolis S41 .....15.70
LosAngeles S41 .....17.75
Lowellville,O. S3 .....15.55
Pawtucket,R.I. N8 ....15.90
Riverdale,Ill. A1 .....15.55
Sharon,Pa. S3 .....15.55
Worcester,Mass. A7 ...15.85
Youngstown S41 .....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.80
Dearborn,Mich. S3 ....10.80
Dover,O. G6 .....10.80
Farrell,Pa. S3 .....10.80
Ind Harbor,Ind. Y1 ...10.80
Sharon,Pa. S3 .....10.80
Warren,O. R2 .....10.80
Weirton,W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C. R. Electrogalvanized

Cleveland A7 .....7.425*
Dover,O. G6 .....7.425*
Evanston,Ill. M22 ....7.525*
McKeesport,Pa. E10 ..7.50*
Riverdale,Ill. A1 ....7.525*
Warren,O. B9, S3, T5 7.425*
Worcester,Mass. A7 ..7.975
Youngstown S41, Y1..7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 .....7.50
Sharon,Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Farrell,Pa. S3 .....5.525
Riverdale,Ill. A1 .....5.675
Sharon,Pa. S3 .....5.525
Youngstown U5 .....5.525

STRIP Cold-Finished Spring Steel (Annealed)

	0.76-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	....	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	...	18.85	22.95	27.80
Buffalo W12	...	18.85	....	....
Fostoria,O. S1	...	19.05	22.15	....
FranklinPark,Ill. T6	...	19.20	23.30	28.15
Harrison,N.J. C18	...	18.85	22.95	27.80
NewYork W3	...	18.85	22.95	27.80
Palmer,Mass. W12	...	18.85	....	....
Trenton,N.J. R5	...	18.85	22.95	27.80
Worcester,Mass. A7, T6	...	18.85	22.95	27.80
Youngstown S41	...	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per lb)			
IndianaHarbor Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10 40	$10.65
Fairfield,Ala. T2	10 50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Irvin,Pa. U5	10.40	10.65
Pitts.,Calif. C11	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.20
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor, Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom, W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	....	19.70	20.20	20.70 ....
Vandergrift,Pa. U5	..	17.10	18.10	19.70	20.20	20.70 15.70
Warren,O. R2	....	....	....	....	....	.... 15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed; semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 .....8.00
Alton,Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville,Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 ....8.00
Crawfordsville,Ind. M8..8.10
Donora,Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield,Ala. T2 .....8.00
Fostoria,O.(24) S1 .....8.10
Houston S5 .....8.25
Jacksonville,Fla. M8 ...8.35
Johnstown,Pa. B2 .....8.00
Joliet,Ill. A7 .....8.00
KansasCity,Mo. S5 .....8.25
Kokomo Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa,Colo. C10 ...8.25
Monessen,Pa. P7, P16...8.00
Palmer,Mass. W12 ....8.30
Pittsburg,Calif. C11 ....8.95
Portsmouth,O. P12 ....8.00
Rankin,Pa. A7 .....8.00
S.Chicago,Ill. R2 .....8.00
S.SanFrancisco C10 ....8.95
SparrowsPoint,Md. B2 ..8.10
Sterling,Ill.(1) N15 ....8.00
Sterling,Ill. N15 .....8.10
Struthers,O. Y1 .....8.00
Waukegan,Ill. A7 .....8.00
Worcester,Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 .....8.00

WIRE, Galv'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....13.40
KansasCity,Mo. U3 ....12.90
Minnequa,Colo. C10 ...12.775
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....13.60
NewHaven,Conn. A7 ....12.95
Palmer,Mass. W12 ....13.70
Pittsburg,Calif. C11 ....13.45
Portsmouth,O. P12 ....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ..13.50
Struthers,O. Y1 .....13.40
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ....12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5, U3.10.00
LosAngeles B3 .....10.70
Minnequa,Colo. C10 ...9.95
Monessen,Pa. P7, P16 ..9.75
NewHaven,Conn. A7 ...10.05
Palmer,Mass. W12 ....10.05
Pittsburg,Calif. C11 ....10.70
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 .....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ....10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Wor'ster,Mass.A7,J4,T6 10.05

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1 .....16.50
Bartonville Ill. K4 ....16.40
Chicago W13 .....16.30
Cleveland A7 .....16.30
Crawfordsville,Ind. M8..16.40
Fostoria,O. S1 .....16.30
Houston S5 .....16.55
Jacksonville,Fla. M8 ..16.65
Johnstown,Pa. B2 .....16.30
KansasCity,Mo. S5 ....16.55
Kokomo,Ind. C16 .....16.30
Minnequa,Colo. C10 ....16.55
Monessen,Pa. P16 .....16.30
Muncie,Ind. I-7 .....16.50
Palmer,Mass. W12 .....16.60
S.SanFrancisco C10 ....17.15
Waukegan,Ill. A7 .....16.30
Worcester,Mass. A7, J6..16.60

WIRE, Tire Bead

Bartonville,Ill. K4 ....17.15
Monessen,Pa. P16 .....17.15
Roebling N.J. R5 .....17.65

ROPE WIRE	(A)
Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
KansasCity,Mo. U3	13.70
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. B2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ..$10.30

NAILS, Cut (100 lb keg) to Distributors (33)

Wheeling,W.Va. W10 ..$10.10

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville,Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago,Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$954
Atlanta A11	10.70
Bartonville,Ill. K4	9.64
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.26
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill. K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9.59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	9.59

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

	Col.
Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80‡
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
St'ling(37) N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage)

	An'ld Galv.
Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325§
Atlanta(48)A11	9.10 9.775§
Bartonville(48) K4	9.10 9.80
Buffalo W12	9.00 9.55†
Cleveland A7	9.00 ....
Crawfordsville M8	9.10 9.80‡‡
Donora,Pa. A7	9.00 9.55†
Duluth A7	9.00 9.55†
Fairfield T2	9.00 9.55†
Houston(48) S5	9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80‡‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	9.00 9.55†
Kans.City(48) S5	9.25 9.80**
Kokomo(48) S16	9.10 9.65†
LosAngeles B3	9.95 10.625§
Monessen(48) P7	8.65 9.35§
Palmer,Mass. W12	9.30 9.85†
Pitts.,Calif. C11	9.95 10.50†
Rankin,Pa. A7	9.00 9.55†
S.Chicago R2	9.00 9.55**
S.SanFran. C10	9.95 10.50**
Spar'wsPt.(48)B2	9.10 9.775§
St'ling(1)(48)N15	9.00 9.70§§
Struthers,O. Y1	9.00 9.65‡
Worcester,Mass.A7	9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts

Full Size Body (cut thread) ½ in. and smaller:

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0
Longer than 6 in.	37.0
⅝ in., 3 in. & shorter	47.0
3¼ in. thru 6 in.	40.0
Longer than 6 in.	31.0
¾ in. thru 1 in.:	
6 in. and shorter	37.0
Longer than 6 in.	31.0
1¼ in. and larger:	
All lengths	31.0

Undersize Body (rolled thread)

½ in. and smaller:

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0

Carriage Bolt

Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts

½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

High Tensile Structural Bolts (Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam	50.0
¾ in. diam	47.0
⅞ and 1 in. diam	43.0
1⅛ and 1¼ in. diam	34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:

¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	62.0
⅞ in. to 1½ in. incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

⅞ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:

6 in. and shorter:

⅝ in. and smaller	35.0
¾, ⅞, and 1 in.	16.0
Longer than 6 in.:	
⅝ in. and smaller	3.0
¾, ⅞, and 1 in.	+11.0

High Carbon, Heat Treated:

6 in. and shorter:

⅝ in. and smaller	20.0
¾, ⅞, and 1 in.	+ 5.0

Longer than 6 in.:

⅝ in. and smaller	+19.0
¾, ⅞, and 1 in.	+39.0

Flat Head Cap Screws:

¾ in. and smaller, 6 in. and shorter + 85.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam:

6 in. and shorter	+ 5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great. Structural ½ in., larger 12.85, 7/16 in. and smaller by 6 in. and shorter: 15% off list.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2¼	12	49.24	57.72	43.70
2½	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....	(16)6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	10.10
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 3 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mills bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c or cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt. Md. B2	2.5	+24	+10.5	+34	+21.5	+43	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+5.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt. Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.25	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.65	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	$36.20	$43.15

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	V-Cr Hot Work (H-13)	0.550
Spec. Carbon (W-1)	0.385	W-Cr Hot Work (H-12)	0.530
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.195
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66 00	66.50	66.50	67.00
Erie,Pa. I-3	66 00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66 00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity, Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. K2	89.00
Keokuk,Iowa O.H. & Fdry. 12½ lb piglet, 16% Si, K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[3]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24#	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85#	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	10.07	11.12	11.92	53.50	12.17	10.19	13.30#	15.64	10.64	10.27	11.95
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.55#	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.00	52.33	8.63	9.10	11.25#	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.20	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25#	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.55	10.61	52.71	9.25	9.40	11.95#	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25#	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.60	16.25	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[2]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif., $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa. $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville.Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates ..... nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$12.50-13.00*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian 91.5c-96.5c, nom, per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00†
48% 2.8:1	38.00-40.00†
48% no ratio	29.00-31.00†

South African Transvaal

44% no ratio	19.75-21.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00†

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens:	
New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.	
Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies).	25.00
Cents per lb, f.o.b. tank cars or tank trucks, deld.	
Phenol, 90 per cent grade	14.75
Per net ton bulk, f.o.b. cars or trucks, plant	
Ammonium sulfate, regular grade	$32.00

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5½	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe, min. trucklots, freight allowed east of Mississippi River:	
100 mesh, bags	11.25
100 mesh, pails	9.10§
40 mesh, bags	8.10††
Electrolytic Iron,	
Melting stock, 99.87% Fe, irreg. fragments, ⅛ in x 1.3 in.	28.75
1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	36.00
Unannealed (99+% Fe) (minus 325 mesh)	59.00
Powder Flake (minus 16 plus 100 mesh)	29.00
Carbonyl Iron:	
98.1-98.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum:	
Atomized, 500-lb drum, freight allowed, c.l. 38.50; ton lots 40.50	
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	33.30-49.50†
Bronze, 5000-lb lots	50.50-54.60†
Copper, electrolytic	14.25*
Copper, reduced	14.25*
Lead	7.50*
Manganese, Electolytic: Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	51.50-56.00†
Phosphor-Copper, 5000-lb lots	62.80
Copper (atomized) 5000-lb lots	43.30
Solder	7.00*
Stainless Steel, 304	$0.89
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20†
Tungsten: Carbon reduced, 98.8% min, minus 65 mesh	Dollars nom**
Chromium, electrolytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scrafing grade. **Depending on price of ore. ††Welding grade.

Imported Steel

(Base per 100 lb, landed, duty paid; based on current ocean rates with any rise for buyer's acc't. Source of shipment: Western Europe)

	North Atlantic	Great Lakes	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$6.03	$6.03	$5.98	$5.88	$6.34
Bar Size Angles	6.03	6.03	5.98	5.88	6.34
Structural Angles	5.93	5.93	5.88	5.78	6.18
I Beams	5.93	5.93	5.88	5.78	6.18
Channels	5.93	5.93	5.88	5.78	6.18
Plates (basic bessemer)	5.70	5.70	5.65	5.55	5.95
Sheets, H.R.	7.00	7.00	6.95	6.85	7.25
Sheets, Galvanized, 20 Ga., 36 in. x 96 in.	9.30	9.30	9.25	9.15	9.65
Sheets, Galv. (in coils) 20 Ga., 48 in. wide	9.45	9.45	9.40	9.30	9.70
Sheets, C.R. (drawing quality)	8.50	8.50	8.45	8.35	8.75
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.22	25.06	24.91	24.61	26.28
Barbed Wire (†)	7.15	7.15	7.10	7.00	7.40
Merchant Bars	6.08	6.08	6.03	5.93	6.33
Hot-Rolled Bands	6.00	6.00	5.95	5.85	6.25
Wire Rods, Thomas Commercial No. 5	6.10	6.15	6.10	6.00	6.35
Wire Rods, O.H.	6.65	6.70	6.65	6.55	6.90
Bright Common Wire Nails (§)	7.65	7.65	7.60	7.50	7.90

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $250 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $255.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $300 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $305.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr, Delivered.

Charge Chrome 1: Cr 63%, C 6% max, Si 7% max, 22c. **Charge Chrome 2:** Cr 50-59%, C 8% max, Si 6% max, 23c. Carload, lump, bulk, per lb Cr.

Refined Chrome 1: Cr 50-59%, C 5% max, Si 2% max, 25c. **Refined Chrome 2:** Si 12% max, 24c. Carload, lump, bulk, per lb Cr.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Delivered.

Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). 8M x D, carload, bulk, 20.05c per lb of alloy, carload packed, 21.25c, ton lot 22.50c, less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29. 40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Keokuk, Iowa; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l., lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload, bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered, Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). C.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 8c per lb or briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l.; bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.1% max). Ton lots 2" x D, $3.45 per lb of contained Cb; less ton lots $3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Carlot bulk 19.25c per lb of alloy, c.l. packed ½ in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

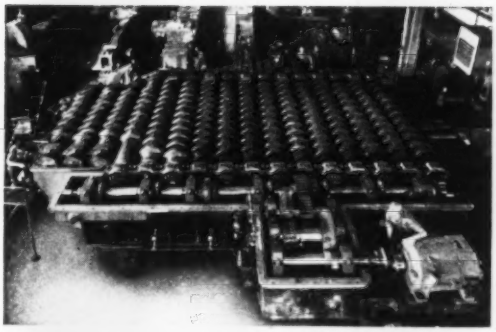
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

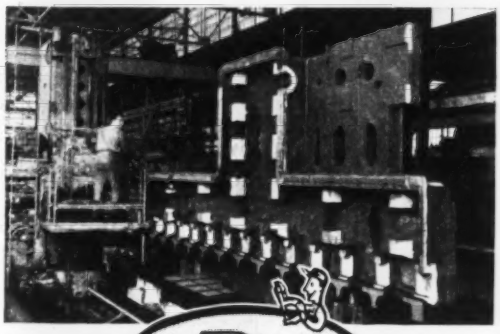
Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo., in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.





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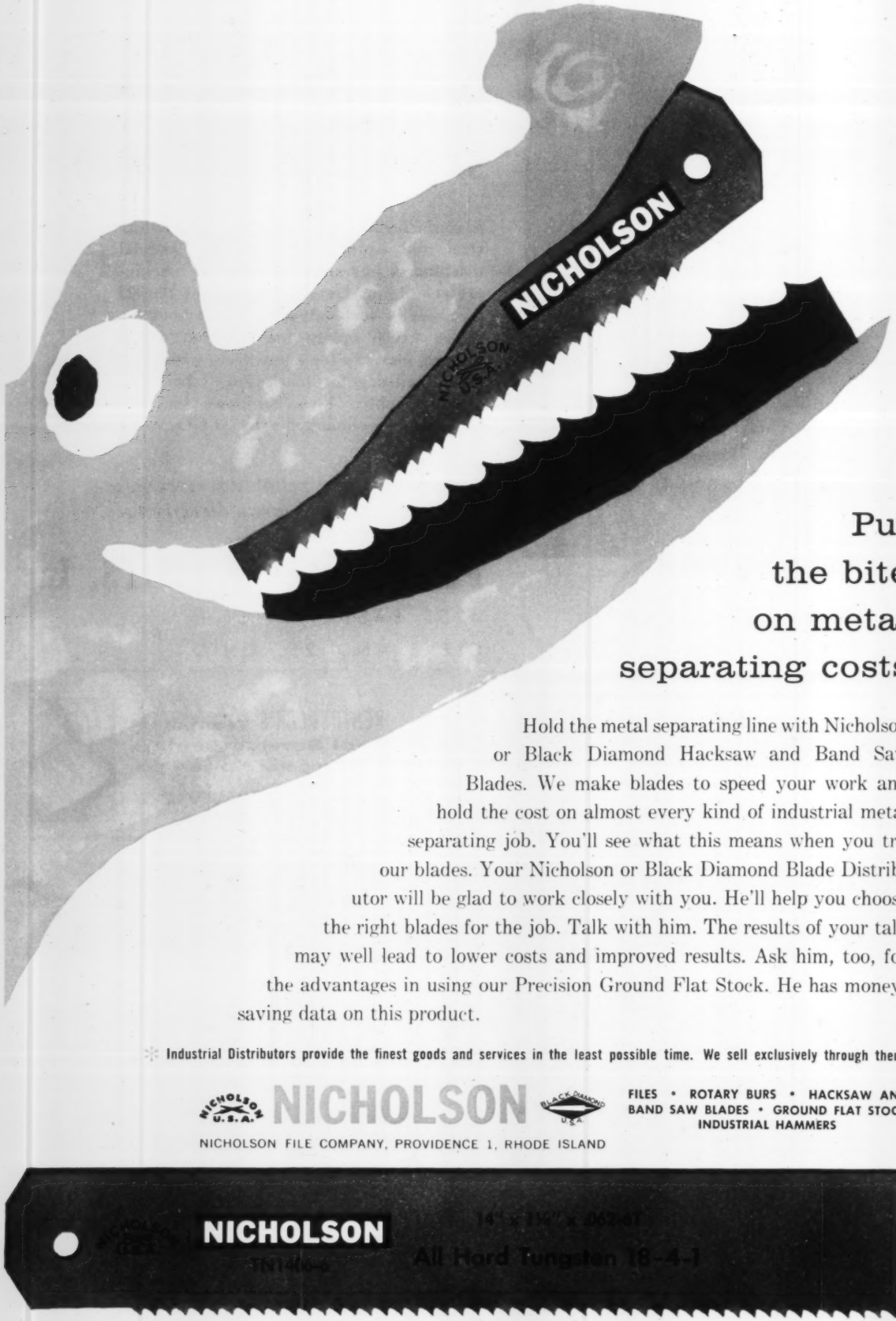

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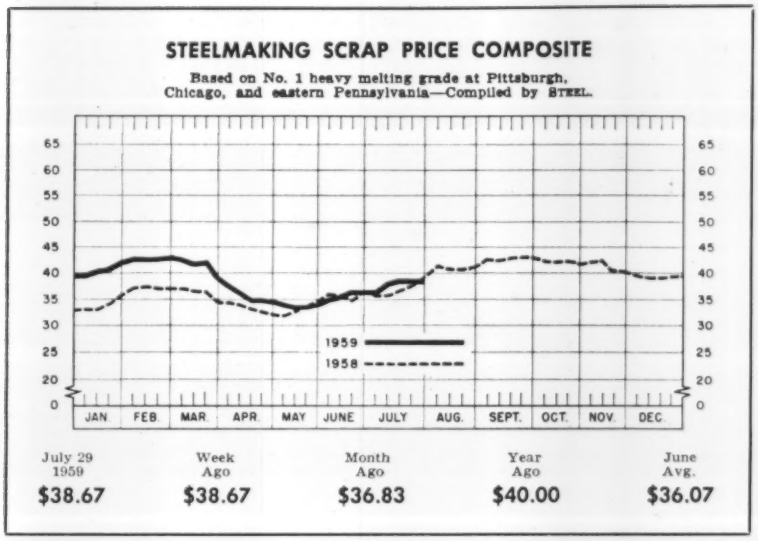

Scrap Index Holds Despite Strike

STEEL's composite on No. 1 heavy melting unchanged at $38.67 for third straight week. Expectations of strong post-strike demand and heavy exports support market

Scrap Prices, Page 124

• **Chicago**—Despite the lack of mill buying, the market is bullish. This is difficult to explain since there is no indication of an early end to the steel strike. The feeling prevails that resumption of mill buying will find the steelmaking grades commanding higher prices. Scrap continues to be generated and is piling up during the period of low consumption. This could operate to lower prices. In the case of turnings, limited distress offerings warrant a $2 per ton markdown.

• **Pittsburgh**—Brokers and dealers are watching the outcome of bids on monthend industrial lists. They will point the way for prices over the next several weeks in the absence of demand because of the steel strike.

Most observers think bids will be about on a level of where they were a month ago. Tonnages offered are expected to be 25 to 30 per cent lower.

Prices are unchanged, but, in the absence of a buying test, they are nominal.

• **Philadelphia** — Four cargoes of steel scrap (total, 36,000 to 40,000 tons) are being loaded here for export. This is the first time in the history of the port that four ships have been loading scrap at the same time. However, it's a situation which was brought about in part by the dock strike, which ended July 22. At least two more vessels will be loaded here before the end of August, accounting for an additional 18,000 tons.

The export movement is accounting for the strength in prices for the open hearth grades at a time when demand is particularly slow because of the steel strike.

Domestic scrap prices are higher on structurals and plates at $43-$45, delivered. In the cast iron grades, heavy breakable is higher at $45, delivered, and drop broken machinery at $50-$51.

Foundry activity is better than had been expected, and while pig iron is not scarce, most blast furnaces are strikebound, hinting of possible iron shortages later.

• **New York** — Brokers' buying prices on steel, cast iron, and stainless grades are unchanged. Firmness in open hearth grades in the face of the strikes at most steel plants is attributed to continued heavy exports. Strength in the cast grades reflects curtailed production of pig iron.

• **Cleveland** — With most of the steel mills closed, there is little activity in the steelmaking grades. However, the foundry grades are moving steadily, and demand from this direction is expected to pick up as vacations end at various shops.

In the absence of a thorough buying test, quoted prices are nominal. But bids on automotive lists will point the way for prices over coming weeks. Some observers think the bids will be about the same as they were a month ago.

• **Detroit**—Buyers are cautious, waiting for some indication of the outcome of steel labor negotiations. Auto lists at the end of July brought no basic changes in the market, although dealer transactions seem weaker. It looks like scrap may go begging this month as the auto

(*Please turn to Page* 129)

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, July 29, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE SCRAP

July 29	$38.67
July 22	38.67
June Avg.	36.07
July 1958	37.54
July 1954	27.42

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	39.00-40.00
No. 2 heavy melting	34.00-35.00
No. 1 dealer bundles	39.00-40.00
No. 2 bundles	26.00-27.00
No. 1 busheling	41.00-42.00
No. 1 factory bundles	48.00-49.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	26.00-27.00
Cast iron borings	26.00-27.00
Cut structurals:	
2 ft and under	47.00-48.00
3 ft and under	46.00-47.00
Heavy turnings	34.00-35.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	47.00-48.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	45.00-46.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	46.00-47.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
Rails, 2 ft and under	58.00-59.00
Rails, 18 in. and under	58.00-59.00
Random rails	53.00-54.00
Angles, splice bars	53.00-54.00
Railroad specialties	53.00-54.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	230.00-235.00
18-8 turnings	115.00-120.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	37.00-38.00
No. 1 hvy melt., dealer	35.00-36.00
No. 2 hvy melting	33.00-34.00
No. 1 factory bundles	41.00-42.00
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	24.00-25.00
No. 1 busheling, indus.	37.00-38.00
No. 1 busheling, dealer	35.00-36.00
Machine shop turnings	*17.00-18.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*19.00-20.00*
Cast iron borings	*19.00-20.00*
Cut structurals, 3 ft	45.00-46.00
Punchings & plate scrap	46.00-47.00

Cast Iron Grades

No. 1 cupola	52.00-53.00
Stove plate	49.00-50.00
Unstripped motor blocks	43.00-44.00
Clean auto cast	58.00-59.00
Drop broken machinery	58.00-59.00

Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
R.R. malleable	59.00-60.00
Rails, 2 ft and under	55.00-56.00
Rails, 18 in. and under	56.00-57.00
Angles, splice bars	50.00-51.00
Axles	59.00-60.00
Rails, rerolling	59.00-60.00

Stainless Steel Scrap

18-8 bundles & solids	210.00-215.00
18-8 turnings	110.00-115.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	41.00-42.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	41.00-42.00
No. 1 bundles	42.00-43.00
No. 2 bundles	25.00-26.00
Machine shop turnings	17.00-18.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Low phos	44.00-45.00
Electric furnace bundles	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	43.00-44.00

CLEVELAND

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	27.00-28.00
No. 1 factory bundles	43.00-44.00
No. 1 bundles	38.00-39.00
No. 2 bundles	25.00-26.00
No. 1 busheling	38.00-39.00
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	40.00-41.00
Cut structurals, plates 2 ft and under	46.00-47.00
Low phos. punchings & plate	39.00-40.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	39.00-40.00

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	38.00-39.00
Heavy breakable cast	38.00-39.00
Stove plate	44.00-45.00
Unstripped motor blocks	36.00-37.00
Brake shoes	36.00-37.00
Clean auto cast	52.00-53.00
Burnt cast	37.00-38.00
Drop broken machinery	52.00-53.00

Railroad Scrap

R.R. malleable	65.00-66.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	46.00-47.00
Railroad specialties	48.00-49.00
Uncut tires	42.00-43.00
Angles, splice bars	51.00-52.00
Rails, rerolling	58.00-59.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	125.00-130.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	23.00
No. 1 busheling	37.00
Machine shop turnings	14.00
Short shovel turnings	16.00

Cast Iron Grades

No. 1 cupola	51.00
Charging box cast	42.00
Heavy breakable cast	40.00
Unstripped motor blocks	41.00
Clean auto cast	54.00
Stove plate	46.50

Railroad Scrap

No. 1 R.R. heavy melt.	40.00
Rails, 18 in. and under	50.00
Rails, random lengths	44.00
Rails, rerolling	58.00
Angles, splice bars	48.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	38.00-39.00
No. 2 bundles	23.00-24.00
No. 1 busheling	*36.00-37.00*
Cast iron borings	14.00-15.00
Machine shop turnings	24.00-25.00
Short shovel turnings	27.00-28.00
Bar crops and plates	*44.00-45.00*
Structurals & plates	*43.00-44.00*
Electric furnace bundles	38.00-39.00
Electric furnace:	
3 ft and under	37.00-38.00
2 ft and under	36.00-37.00

Cast Iron Grades

No. 1 cupola	55.00-56.00
Stove plate	55.00-56.00
Charging box cast	29.00-30.00
Unstripped motor blocks	42.00-43.00
No. 1 wheels	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 18 in. and under	52.00-53.00
Rails, rerolling	*57.00-58.00*
Rails, random lengths	46.00-47.00
Angles, splice bars	*44.00-45.00*

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	35.00
No. 1 bundles	40.00-41.00
No. 2 bundles	26.00-28.00
No. 1 busheling	40.00-41.00
Electric furnace bundles	42.00
Mixed borings, turnings	20.00†
Short shovel turnings	24.00-25.00
Machine shop turnings	20.00
Heavy turnings	34.00
Structurals & plate	*43.00-45.00*
Couplers, springs, wheels	45.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	*45.00*
Drop broken machinery	*50.00-51.00*
Malleable	67.00-68.00

NEW YORK

(Brokers buying prices)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	27.00-29.00
No. 1 bundles	30.00-31.00
No. 2 bundles	19.00-20.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	12.00-13.00†
Short shovel turnings	13.00-14.00†
Low phos. structurals & plates	36.00-37.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	85.00-90.00

BUFFALO

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	33.00-34.00
No. 2 bundles	23.00-24.00
No. 1 busheling	33.00-34.00
Short shovel turnings	21.00-22.00
Machine shop turnings	17.00-18.00
Cast iron borings	19.00-20.00
Low phos structurals and plate, 2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	42.00-43.00
No. 1 machinery	46.00-47.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.50-36.50
No. 2 heavy melting	30.50-31.50
No. 1 bundles	35.50-36.50
No. 2 bundles	25.00-26.00
No. 1 busheling	35.50-36.50
Machine shop turnings	19.00-20.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings	21.00-22.00
Cast iron borings	20.00-21.00
Low phos., 18 in.	45.00-46.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Heavy breakable cast	42.00-43.00
Charging box cast	42.00-43.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	47.00-48.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	21.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	43.00-44.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Heavy breakable	33.00
Foundry malleable	42.00-43.00
Unstripped motor blocks	38.50-39.50

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	20.00-20.50
No. 1 bundles	26.00-27.00
No. 1 busheling	26.00-27.00
Machine shop turnings	10.00-11.00
Short shovel turnings	12.00-13.00
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	35.00-36.00
No. 2 bundles	21.00-22.00
No. 1 busheling	33.00-34.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	13.00-14.00
Short shovel turnings	14.00-15.00

Cast Iron Grades

No. 1 cupola	47.50-48.50
Stove plate	39.00-40.00
Heavy breakable	40.00-41.00
Unstripped motor blocks	29.00-30.00
Charging box cast	40.00-41.00
Clean auto cast	51.00-52.00

SEATTLE

No. 1 heavy melting	35.00†
No. 2 heavy melting	33.00†
No. 1 bundles	27.00†
No. 2 bundles	22.00†
Machine shop turnings	17.00†
Mixed borings, turnings	17.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	34.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	26.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	39.00
No. 2 heavy melting	37.00
No. 1 bundles	36.50
No. 2 bundles	20.00
Machine shop turnings	*17.50*
Shoveling turnings	*19.50*
Cast iron borings	19.00
Cut structurals and plate 1 ft and under	*45.50*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*46.50*

Railroad Scrap

No. 1 R.R. heavy melt.	*39.00*

SAN FRANCISCO

No. 1 heavy melting	36.00
No. 2 heavy melting	33.00
No. 1 bundles	33.00
No. 2 bundles	22.00
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Cast iron borings	16.00
Heavy turnings	16.00
Short shovel turnings	16.00
Cut structurals, 3 ft	42.00

Cast Iron Grades

No. 1 cupola	*47.00*
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

No. 1 heavy melting	32.25
No. 2 heavy melting	28.25
No. 1 bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Mixed borings, turnings	13.00
Busheling, new factory: Prepared	32.25
Unprepared	26.25
Short steel turnings	17.00

Cast Iron Grades‡

No. 1 machinery cast	46.50-48.00

†Nominal.
‡F.o.b. Hamilton, Ont.

THE U.S. TREASURY SALUTES THE PEOPLE IN THE STEEL INDUSTRY

—who buy Savings Bonds and strengthen America's Peace Power

Men and women who earn their living in the steel industry can take great pride in knowing that their crafts and skills contribute, through raw material supplies, to nearly every other great industry in the United States. They can also be proud of the help thousands upon thousands of them are giving to America's Peace Power through the purchase of U.S. Savings Bonds.

Through regular purchase of Shares in America, these thrift-conscious people are reinforcing their own security after retirement, and establishing current reserves for such worthwhile family projects as new homes, education and travel.

If your company has not put in a Payroll Savings Plan thus far, you can start immediately. Just telephone your State Savings Bonds Director and accept the help he wants to give you. Or write to Savings Bonds Division, U.S. Treasury Department, Washington, D.C.

J. K. Thomson is shown here at his work in one of the great steel mills of this country. Like thousands of his fellow craftsmen, Mr. Thomson is making regular use of his company Payroll Savings Plan to contribute to the Peace Power of his country.

STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE.

Labor Outlook Spurs Sales

As chances for labor peace grow, you can expect an upswing in orders. But there will be no spurt until after steel settles. Titanium sponge prices cut

Nonferrous Metal Prices, Pages 128 & 129

THE GROWING CHANCES for labor peace in the nonferrous field (see Page 39) will stimulate sales.

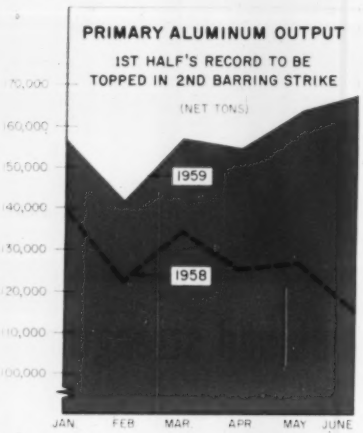
Customers have been waiting to see which way the labor horse was going to jump. Now that the prospects for labor peace in aluminum have brightened and with sporadic settlements in some metals and a stretchout of negotiations in others, metalmen predict wider interest in buying.

But four factors will limit any sharp gains in the next few weeks: 1. The steel strike will dig deeply into potentials for zinc, nickel, tin. If it continues long enough to close down a substantial portion of metalworking industry, the entire nonferrous field will take a shellacking. 2. Users of copper, lead, and zinc will buy cautiously until progress in negotiations is a little more evident. 3. There's bound to be some inventory workoff as confidence in labor peace grows. 4. Most metals are now experiencing the normal summer business dip.

• **Aluminum**—The new order rate has tapered off in the last few weeks. Customers evidently felt there was little point in placing an order that couldn't be filled before the July 31 contract deadline. Now that users are guaranteed uninterrupted production until after steel settles, many will come into the market for additional metal.

The union-management agreement also virtually assures that the domestic industry will set an all-time production high this year. For the first six months of the year, primary output hit a record 942,399 tons compared with 762,561 tons in the same period last year. Potlines should churn out an even greater amount of metal in the second half. Currently, the industry is operating at an annual rate of 2,143,000 tons, STEEL estimates.

If the United Steelworkers and Aluminum Workers International Union had walked out, just 367,500 tons of the industry's 2,341,750 tons of annual capacity would have been unaffected. If the USW alone had struck, it would have shut down primary production facilities at 11 plants having a capacity of



Source: Aluminum Association

1,366,750 tons, six of the industry's eight alumina plants, and 15 fabricating facilities.

• **Copper**—Sales fell sharply after expiration of contracts on June 30. There has been some revival of interest lately that should be spurred by the development in aluminum. The aluminum extension undoubtedly means temporary labor peace at those copper facilities having the USW. It should also stimulate negotiations between management and the Mine-Mill workers. All those factors will work toward giving users greater confidence in the market.

• **Lead** — Sales have been light, mainly because customers have been working off the stocks they built up during the wave of buying in the early spring and late summer. The normal inclination to begin buying again will be sharpened as the labor picture improves, say metalmen.

• **Zinc** — Shutdown of steel has eaten heavily into zinc sales. There's moderate demand from diecasters and hot dip galvanizers, but little hope is held for any kind of a sales stepup until the steel walkout is settled. You can expect a price hike when that occurs.

Titanium Price Dips

If you're a user of titanium sponge, you can get your metal for less. Effective Aug. 1, the price of A-1 grade was dropped to $1.60 a pound from its former price of $1.82; A-2 grade from $1.70 to $1.50 a pound. E. I. du Pont de Nemours & Co. initiated the action which was immediately followed by the other producers.

Producers say they have no plan to lower mill product prices at this time.

NONFERROUS PRICE RECORD

	July 29 Price	Last Change	Previous Price	June Avg	May Avg	July, 1958 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	24.000
Copper	29.50-30.00	July 16, 1959	29.00-30.00	31.490	31.750	26.125
Lead	11.80	May 7, 1959	11.30	11.800	11.700	10.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	101.75	July 29, 1959	102.00	104.284	103.080	94.950
Zinc	11.00	Feb. 25, 1959	11.50	11.000	11.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. customer custody; MAGNESIUM, pig 99.8%, Velasco, Tex.

This late model emission-type spectrograph can give direct dial readings on as many as 20 different chemical elements in testing the composition of a special steel alloy.

Latest laboratory equipment speeds quality control at Standard

Installed in the Metallurgical Laboratory at Standard Steel Works are the latest scientific testing instruments for the most accurate and rapid testing of steels in all stages of production. Samples are delivered by pneumatic tube from melting furnace to laboratory in 90 seconds. Using the spectrograph pictured above, analyses can be determined in 1½ minutes, saving hours of time over older methods.

Standard's recently installed electric furnace and vacuum degassing equipment assure delivery on special alloy products in the shortest possible time. Standard's quality control procedure guarantees that your most exacting requirements will be met. Write Dept. 2-H for details.

There is a specific refraction index to fluorescent X-rays for each metal, and this latest, most interesting use of them is employed to determine the composition of certain stainless and other high-alloy steels.

Standard Steel Works Division

BALDWIN · LIMA · HAMILTON

BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. customer custody.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.30 per lb deld.

Cobalt: 97.99%, $1.75 per lb for 500-lb keg, $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 30.00 deld.; custom smelters, 29.50; lake, 30.00 deld.; fire refined, 29.75 deld.

Germanium: First reduction, less than 1 kg, 38.30 per gram; 1-10 kg, 33.30 per gram; 10 kg or more, 31.30 per gram; intrinsic grade, 33.30-35.30 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 per troy oz nom.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis. New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 50 lb, $11 per lb, f.o.b. Minneapolis; 50-99 lb, $10; 100-499 lb, $9.50; 500 lb or more, $9 per lb, delivered.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $234-236 per 75 lb flask.

Molybdenum: Unalloyed forging billets, 4.125-7.0 in. diam., $9.85 per lb in lots of 2500 lb or more, f.o.b. Coldwater, Mich.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. ports of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $18-20 per troy oz.

Platinum: $77-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Melting stock, $35 per lb; rod, $60 per lb nom.; sheet, $55 per lb nom.

Tellurium: $2.50 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 101.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.60; grade A-2 (0.5% Fe max.), $1.50 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 14.00; No. 2, 14.50; No. 5, 14.25 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 26.00-27.75; No. 12 foundry alloy (No. 2 grade), 23.75-24.00; 5% silicon alloy, 0.60 Cu max., 25.00; 13 alloy, 0.60 Cu max., 25.00; 195 alloy, 26.75-27.00; 108 alloy, 24.25-24.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 24.50; grade 2, 23.25; grade 3, 22.25; grade 4, 21.50.

Brass Ingot: Red brass No. 115, 29.25; tin bronze, No. 225, 39.75; No. 245, 33.50; high-leaded tin bronze, No. 305, 33.50; No. 1 yellow, No. 405, 23.75; manganese bronze, No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb: nom. 1.9% Be alloy.) Strip, $1.895, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.875, f.o.b. Temple, Pa.

COPPER WIRE

Bars, soft, f.o.b. eastern mills, 20,000-lb lots, 35.355; l.c.l., 35.98. Weatherproof, 20,000-lb lots, 36.29; l.c.l., 37.04.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.25-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	138	120	138
Strip, C.R.	124	108	138
Plate, H.R.	130	110	126
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	46.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	84.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-75.30	90.60-91.30
36-38	66.10-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.50-23.00; No. 2 heavy copper and wire, 20.50-21.00; light copper, 18.50-19.00; No. 1 composition red brass, 17.00-17.50; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 30.00c)		
	Sheets, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.13b	51.36c	....	54.32	26.000	26.000	25.250
Yellow Brass	47.24	31.81d	47.78	50.65	19.625	18.750	17.750
Low Brass, 80%	50.03	47.97	50.57	53.34	22.000	21.750	21.250
Red Brass, 85%	51.02	50.96	51.56	54.33	22.875	22.625	22.125
Com. Bronze, 90%	52.55	52.49	53.09	55.61	23.875	23.625	23.125
Manganese Bronze	55.61	49.30	59.74	....	18.375	18.125	17.500
Muntz Metal	49.95	45.26	....	....	18.375	18.125	17.625
Naval Brass	51.90	45.71	58.46	55.31	18.250	18.000	17.500
Silicon Bronze	59.23	58.42	58.77	76.91	25.500	25.250	24.500
Nickel Silver, 10%	62.85	65.18	65.18	....	24.500	24.250	12.250
Phos. Bronze	73.92	74.42	74.42	75.60	27.125	26.875	25.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 16.00-16.50; new brass clippings, 14.50-15.00; light brass, 10.50-11.00; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.00-12.50; auto radiators, unsweated, 13.25-13.50; cocks and faucets, 13.00-13.50; brass pipe, 13.00-13.50.

Lead: Soft scrap lead, 7.75-8.25; battery plates, 2.50-3.00; linotype and stereotype, 9.25-9.75; electrotype, 7.75-8.25; mixed babbitt, 9.175-10.25.

Monel: Clippings, 30.00-32.00; old sheets, 26.00-28.00; turnings, 20.00-22.00; rods, 30.00-32.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 39.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.25-3.50; new diecast scrap, 3.00-3.25; old diecast scrap, 1.75-2.00.

Aluminum: Old castings and sheets, 11.50-12.00; clean borings and turnings, 7.25-7.75; segregated low copper clips, 14.75-15.25; segregated high copper clips, 14.25-14.75; mixed low copper clips, 15.00-15.50; mixed high copper clips, 12.25-12.75.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 12.75-13.25; clean borings and turnings, 10.00-10.50; segregated low copper clips, 17.25-17.75; segregated high copper clips, 16.25-16.75; mixed low copper clips, 16.50-17.00; mixed high copper clips, 15.75-16.25.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.50-11.75; clean borings and turnings, 10.50-11.00; segregated low copper clips, 15.75-16.25; segregated high copper clips, 14.75-15.25; mixed low copper clips, 15.25-15.75; mixed high copper clips, 14.25-14.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)
Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 56.00; light scrap, 51.00; turnings and borings, 36.00.

Copper and Brass: No. 1 heavy copper and wire, 26.00; No. 2 heavy copper and wire, 24.00; light copper, 21.75; refinery brass (60% copper) dry copper content, 23.50.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 26.00; No. 2 heavy copper and wire, 24.00; light copper, 21.75; No. 1 composition borings, 20.00; No. 1 composition solids, 20.50; heavy yellow brass solids, 15.00; yellow brass turnings, 14.00; radiators, 16.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.30.

Copper: Flat-rolled, 46.29; oval, 44.50, 5000-10,000 lb; electrodeposited, 36.00, 2000-5000 lb lots; cast, 41.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 120.50; 200-499 lb, 119.00; 500-999 lb, 118.50; 1000 lb or more, 118.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.30 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.95; 2000-5900 lb, 12.95; 6000-11,900 lb, 12.70; 12,000-22,900 lb, 12.45; 23,000 lb or more, 11.95.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 23.80; 400-800 lb, 20.80; 1000-4900 lb, 19.80; 5000-19,900 lb, 18.80; 20 000 lb or more, 17.60.

Sodium Stannate: Less than 100 lb, 79.50; 100-600 lb, 70.20; 700-1900 lb, 67.40; 2000-9900 lb, 65.60; 10,000 lb or more, 64.20.

Stannous Chloride (Anhydrous): 25 lb, 155.00; 100 lb, 150.10; 400 lb, 147.70; 800-19,900 lb, 106.80; 20,000 lb or more, 100.70.

Stannous Sulphate: Less than 50 lb, 140.20; 50 lb, 110.20; 100-1900 lb, 108.20; 2000 lb or more, 106.20.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 123)

plants go down for model changeovers.

• **Buffalo**—Prices are holding despite the lack of mill demand. Some No. 1 grades are moving out of the district; also, Canadian mills are taking some material.

Demand from local foundries for cast scrap is fairly strong. This is the only bright spot in the market.

Dealers report that the influx of material has been slowed by vacations, but receipts are still fair.

• **Cincinnati**—The market is standing still. There has been no new buying to test prices, but one area mill is expected to announce its buying program shortly. It is not affected by the steel strike.

Dealers are showing unusual confidence in prices. However, bids on industrial lists will pretty much set the market pattern for the month. No. 1 heavy melting continues to be quoted at $35.50-$36.50, brokers' buying prices.

• **St. Louis**—Scrap is scarce but prices are unchanged. The mills just aren't making any offers. If they would, it's not certain they could get much tonnage without raising their quotations. That's because prices are rising in other areas. The mills are eating into their inventories. A barge strike has cut shipments the last several weeks.

• **Birmingham** — The market appears a little weaker, with consumers and dealers waiting to see which way prices will go. A few items are quoted lower, but some dealers decline to accept the lower figures as representative. There is no market for the open hearth grades because of the strike, and prices quoted on them are nominal.

An Anniston electric furnace returned to the market for limited quantities of specialty items at established prices. Dealers report the foundry grades are scarce.

• **Houston**—Except for this immediate area, the Texas scrap market is active on new purchases by the Lone Star mill and old, unfilled commitments for Mexican mills.

The Lone Star consumer returned to the market and raised its buying

IF YOU OPERATE A FURNACE . . . . .

We will purchase your scrap linings, retorts, conveyors, muffles, racks, etc. Any item made of Nickle alloy.

Write, Wire or Call
Weinstein Co.,
610 W. 8th St.
Jamestown, N. Y.
Phone 61-154

FOR SALE LESS THAN MILL PRICE
NEW PLATE
90 tons 5/16 x 18 x 72 nickel chrome moly SAE 8630 annealed, P. & O. on skids.
BARKSDALE MFG. CO.
Blytheville, Ark.

Belgian steel and cement exporter touring United States of America with steel mill executive early September wishes to act as purchasing agent on a commission basis for American steel warehouses and/or importers. For details address Box No. 781, STEEL, Penton Bldg., Cleveland 13, Ohio.

GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 3,000 new motors in stock from ¼HP to 200HP. Special low prices
Write, wire or phone collect!
AJAX ELECTRIC MOTOR CORP.
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CLASSIFIED

Help Wanted

PLANT FOREMAN
Must be experienced in production methods and have ability to handle men in Cold Drawn Steel Plant. College education with some mechanical background desirable but not essential. This is a permanent position with a rapidly expanding company located in the East. Reply giving full particulars. All replies will be held strictly confidential. Box 780, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

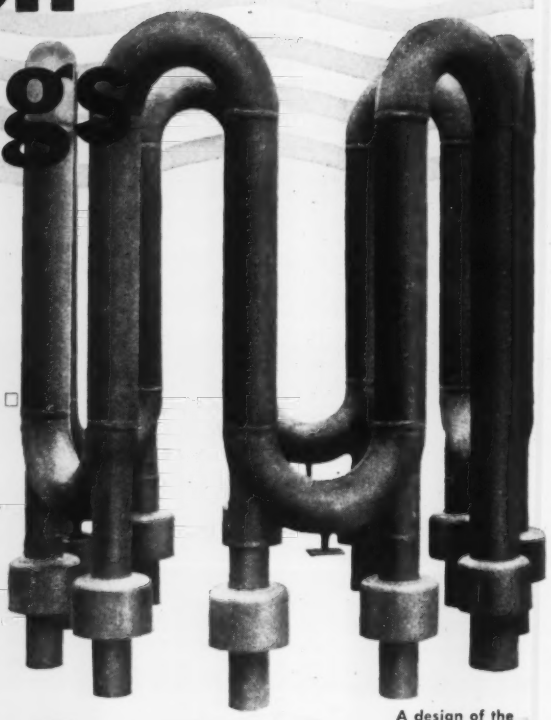
STEEL FABRICATION
Engineer — Estimator — Production Manager — Superintendent. Graduate Engineer — 25 years in Steel Fabrication Buildings — Bridges — Plate Work — Riveted & Welded Construction. Wishes responsible position with progressive company. Reply Box 779, STEEL, Penton Bldg., Cleveland 13, Ohio.

POSITION WANTED: With efficient and aggressive Ornamental Iron, Aluminum and Stainless Steel Fabricator requiring the services of a top grade man capable of assuming complete charge of engineering and estimating and the coordinating of various departments. Very good draftsman and engineer with very broad experience in complicated work. Age 49 years, neat appearance, good health, and very good references. Could be available within sixty days. Reply Box 777, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT high calibre men to fill specific jobs you have in mind—

Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry. When you have an opportunity to offer, use the Help Wanted columns of STEEL.

when things are HOT... call on Duraloy



A design of the A. F. Holden Co., Detroit, Mich.

Castings that Keep their Load-Carrying Strength at High Temperatures

This "immersion type radiant heater" is typical of the high reliability castings turned out by DURALOY. Centrifugally cast tubes with *UNIFORM* wall thickness...for longest service life. Static cast collars and shell molded bends...typical of DURALOY versatility.

For your high alloy casting requirements check with DURALOY... our long experience, ultra-modern foundry and up-to-the-minute test equipment will be helpful in solving your problems. For more information ask for Bulletin No. 3150 G.

The DURALOY Company
OFFICE AND PLANT: Scottdale, Pa.
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

prices $4 a ton on steel scrap and $1 a ton on bundles. The mill specified shipment by Aug. 26. Its contract with the steel union will expire Sept. 7.

On a remote basis, brokers for Lone Star are quoting $39 for No. 1 heavy melting, $37 for No. 2 heavy melting, and $26 for No. 2 bundles. The higher prices are designed to meet Mexican competition.

None of the Lone Star orders will be filled in the Houston area, where limited export buying is the only activity. Houston export prices hold in line with those paid by the Houston mill before it was struck.

Cast iron scrap prices are unchanged on poor supply and light demand.

• **San Francisco**—No. 1 cupola cast scrap prices are up $3 a ton, now being quoted at $47. Prices on steel scrap are unchanged despite the absence of mill buying. Exports are a sustaining influence.

• **Los Angeles**—With the domestic mills closed by the strike, except for several with unexpired or extended labor agreements, the movement of scrap is largely confined to export tonnage. Dealers' yards are full, and posted prices are off as much as $4.50 a ton.

Scrap Consumption Slipped Slightly During May

Consumption of home and purchased scrap in May totaled 6,642,000 gross tons, off slightly from the 6,645,000 reported for April, reports the Institute of Scrap Iron & Steel Inc. Purchased scrap declined to 2,681,000 tons from 2,743,000 in April and 2,839,000 in March.

Licenses for scrap exports eased slightly in June to 299,000 tons from 310,000 in May and 407,000 in April. In June a year ago, they were 218,000 tons.

Steel mill stocks of home and purchased scrap at the end of May were 6,905,000 tons vs. 6,977,000 in April and 6,950,000 in March. Foundry stocks were 1,322,000 tons vs. 1,299,000 in the preceding month and 1,288,000 in March.

The steel strike is adding to scrap processors' problems.

Advertising Index

Acheson Colloids Co. 84
Adams, R. P., Co., Inc. 16
Air Reduction Sales Co., A Division of Air Reduction Co., Inc. 13
Ajax Electric Motor Corporation 129
Allegheny Ludlum Steel Corporation 132
American Electric Switch Division, The Clark Controller Co. 3
American Society for Metals 68
Armco Steel Corporation 34
Atlas Car & Mfg. Co., The 10

Baker, J. E., Co., The 67
Baldwin-Lima-Hamilton Corporation, Standard Steel Works Division 127
Barksdale Mfg. Co. 129
Basic, Inc. 28
Behr-Manning Co., A Division of Norton Co. 12
Bethlehem Steel Co. 1
Binks Manufacturing Co. 107
Bullard Co., The 54

Carlson, G. O., Inc. 71
Cattie, Joseph P., & Brothers, Inc. 121
Central Foundry Division, General Motors Corporation 50, 51
Chase Brass & Copper Co. 88, 89
Chicago Tramrail Corporation 99
Clark Controller Co., The, American Electric Switch Division 3
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 18
Colorado Fuel & Iron Corporation, The 17
Cutler-Hammer, Inc. ..... Back Cover

Detrex Chemical Industries, Inc. 65
DoAll Co., The 81
Drake Hotel, The 96
Duraloy Co., The 130

Eastman Kodak Co., X-ray Division 87
Electric Controller & Mfg. Co., The, A Division of The Square D Co. ..... Inside Front Cover
Ex-Cell-O Corporation 6
Ex-Cell-O Corporation, Machinery Division ... 7

Fafnir Bearing Co., The 72
Fairbanks, Morse & Co. 22
Fairfield Manufacturing Co. 106
Federal Machine & Welder Co., The 108
Foster, L. B., Co. 98

General Motors Corporation, Central Foundry Division 50, 51

Harbison-Walker Refractories Co. 24, 25
Harrington & King Perforating Co., Inc., The 96
Hayes, C. I., Inc. 61
Houghton, E. F., & Co. 19
Hyde Park Foundry & Machine Co. 131

Inland Steel Co. 33

Jeffrey Manufacturing Co., The 26

Kardong Brothers, Inc. 121
Kidde, Walter, & Co., Inc. 92

Landis Machine Co. 11

McKee, Arthur G., & Co. 83

Milford Rivet & Machine Co., The 60
Morgan Construction Co. 47

National Steel Corporation 23
Nicholson File Co. 122
Norton Co., Behr-Manning Co. Division 12
Norton Co., Machine Division 8, 9

Olin Mathieson, Metals Division 14, 15

Pangborn Corporation ..... Inside Back Cover
Pannier Corporation, The 97
Peninsular Steel Co. 121
Pickands Mather & Co. 58
Production Experts, Inc. 121

Republic Steel Corporation 20, 21
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 17
Ruemelin Mfg. Co. 98
Ryerson, Joseph T., & Son, Inc. 36

Siegler Corporation, The, Vac-U-Lift Co. Division 105
SKF Industries, Inc. 2
Square D Co., The, The Electric Controller & Mfg. Co. Division ..... Inside Front Cover
Standard Pressed Steel Co., Nuclear Components Division 102
Standard Steel Works Division, Baldwin-Lima-Hamilton Corporation 127
Steel Equipment Co. 95

Texaco, Inc. 100
Tinnerman Products, Inc. 62

Ulbrich Stainless Steels 109

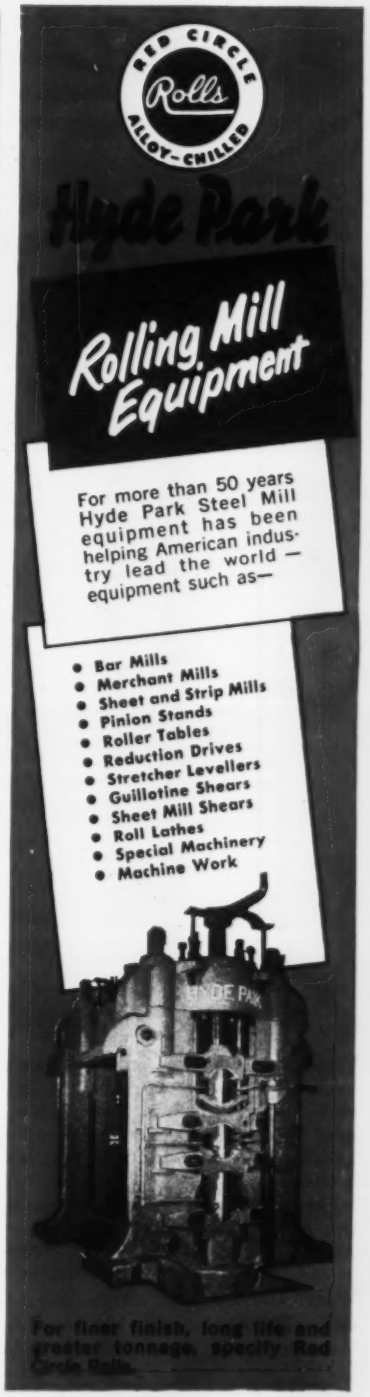
Vac-U-Lift Co., Division of The Siegler Corporation 105
Veeder-Root, Inc. 4

Ward Steel Co. 123
Washington Steel Corporation 104
Wean Equipment Corporation 57
Weinstein Co. 129
Weirton Steel Co. 23
Westinghouse Electric Corporation 48
Wheland Co., The, Foundry Division 112

Yawata Iron & Steel Co., Ltd. 27

~ ~ ~

Table of Contents
Facing Inside Front Cover
Classified Advertising, Page 129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For more than 50 years Hyde Park Steel Mill equipment has been helping American industry lead the world — equipment such as—
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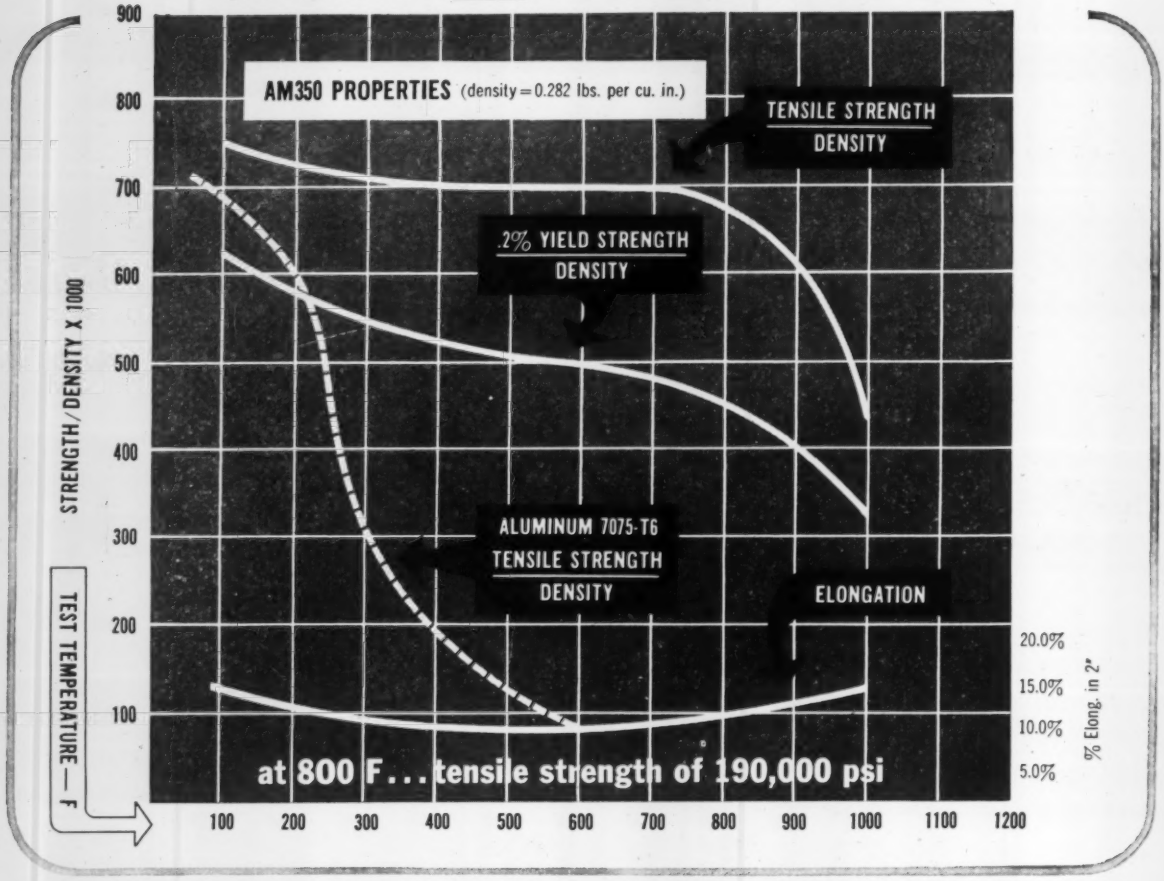
HYDE PARK
For finer finish, long life and greater tonnage, specify Red Circle Rolls.

Experience**—the extra alloy in **Allegheny Stainless



Here are the facts on AM350 and AM355, Allegheny Ludlum's precipitation hardening stainless steels

A unique combination of highly desirable properties is the usual description of Allegheny Stainless AM350 and AM355 Steels. They combine high strength at both room and elevated temperatures, excellent corrosion resistance, ease of fabrication, low temperature heat treatment, good resistance to stress corrosion.

They are proving the answer to many problems of the air age. Airframe and other structural parts, pressure tanks, power plant components, high pressure ducting, etc. are all natural missile and supersonic aircraft applications for AM350 and AM355.

Availability: AM350, introduced several years ago, is available commercially in sheet, strip, foil, small bars and wire. AM355, best suited for heavier sections, is available in forgings, forging billets, plate, bar and wire.

Corrosion resistant: Being stainless steels, these alloys resist corrosion and oxidation. Compared to the older, more familiar stainless grades, their corrosion rating is better than the hardenable grades (chromium martensitic) but generally less than the old corrosion resistant standbys, the 18 and 8's. Stress corrosion is resisted at much higher hardness levels than with martensitic stainless.

Simple heat treatment: High strength is developed by two methods, both involving less than ordinary temperatures and minimizing oxidation and distortion problems. The most popular, and one that develops slightly better properties, is the Allegheny Ludlum developed sub-zero cooling and tempering (SCT condition). The material is held at minus 100 F for 3 hrs plus 3 hrs at 850 F. Alternate method is Double Aged (DA): 2 hrs at 1375 F plus 2 hrs at 850 F.

Easy fabrication: AM350 and AM355 can be spun, drawn, formed, machined and welded using similar procedures as with the 18-8 stainless types. In the hardened condition (SCT & DA) some forming may be done . . . 180 degree bend over a 3T radius pin. Also it can be dimpled in the hard condition to insure accurate fit-up.

For further information, see your A-L sales engineer or write for the booklet "Engineering Properties, AM350 and AM355." *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.* Address Dept. S-20.

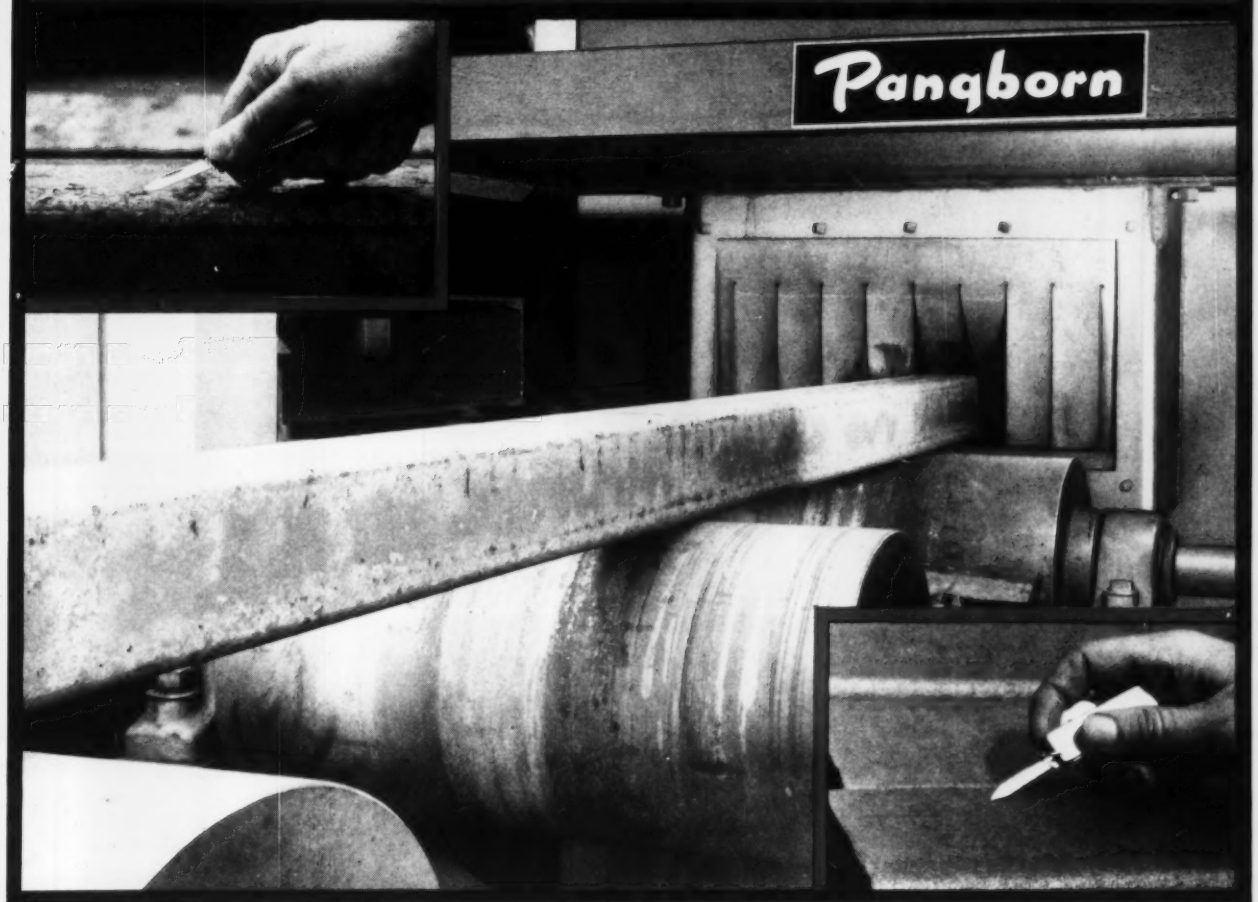
WSW 7327

ALLEGHENY LUDLUM

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

GIVES "JUST RIGHT" DESCALING!



Large steel producer uses Rotoblast descaling for exact cleaning quality

To facilitate inspection for flaws, one of the country's leading steel producers cleans ¾-ton billets with a special Rotoblast descaling machine. Because cleaning time depends on the varying steel composition of the billets, this machine is equipped with six different speed settings. According to company supervisors, the quality of Rotoblast cleaning is "just right" . . . all loose scale is removed for easy inspection without over-blasting to peen over and hide flaws. What's more, Rotoblast operation is reported to be efficient, dependable and trouble-free.

If you have a standard or special descaling problem, your solution is Pangborn Rotoblast. Ask the Pangborn man in your area or write PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment—Rotoblast Steel Shot and Grit.*

Pangborn

CLEANS IT FAST WITH ROTOBLAST®

Cut Production Costs with

ULTRAFLEX STATIC POWER

Adjustable Speed Packaged Drives

NO MOVING PARTS Static power conversion units have replaced the conventional M-g set. Ultraflex Packaged Drives save up to 50% in floor area . . . up to 75% in weight, permitting low cost installations or alterations without special handling equipment or floor loading preparations.

NO MOVING PARTS Ultraflex Packaged Drives work perfectly without forced ventilation . . . less power wasted as unwanted heat. No power robbing friction or windage losses. A closed-loop voltage regulation system, current limit control, and static field excitation insure peak operational efficiency.

NO MOVING PARTS Simple static power conversion units cut maintenance costs. With Ultraflex there are *no* bearings, commutators, or brushes to service. *No* shafts to align or couplings to maintain. *No* inertia loads to balance. *No* fans or filters to clean or change.

Standard Ultraflex Drives provide an 8:1 speed range with wider ranges available upon request. Optional features include dynamic braking, jogging, reversing, tachometer-generator speed regulation, etc. Get all the facts, and see how a Cutler-Hammer Ultraflex Packaged Drive can provide outstanding savings in installation, operation, and maintenance. Write today for new bulletins EN64-Q213, and EN65-Q213. Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

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